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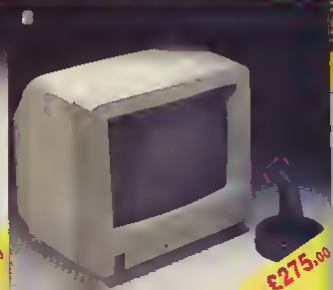

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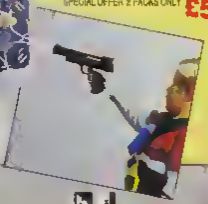

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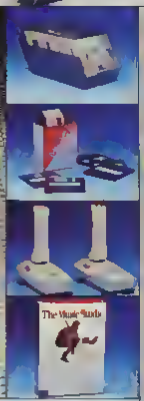

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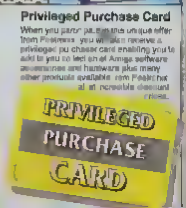

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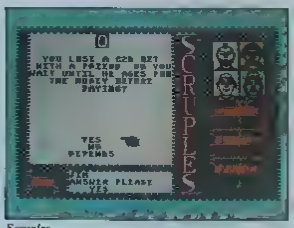
ABC

REGULARS

		C64	C1?	C128	+4
• *Data Statements*	6	●	●	●	●
• *Games Reviews*	25	●		●	
• *Software for Sale*	80				
• *Competition* — Win a copy of Bone Cruncher and a personal stereo	82	●		●	
• *I.Q.* — Intellectual games playing	64	●		●	
• *Bone Cruncher* — Game of the Month	89	●		●	
• *Listings* — How to type in the programs	100	●		●	●
• *Back Page*	122	●	●	●	●



Scruples

FEATURES

		C64	C1?	C128	+4
• *Programming for Profit* — Take our advice and you ll soon be on your way to making a fortune	12	●	●	●	●
• *Label-Linker* — A handy utility for labelling	20			●	
• *Welcome Back* — A handy compilation of re-released budget games	70	●			

		C64	C16	CP/M	+4
• *The Alternate Collection*	77	●		●	
• *Sysres*	74	●		●	
Increase the capability of BASIC with this handy utility					
• *Choice of Modem*	96	●		●	
David Janda looks at two completely different modems					
• *Super Mouse*	99	●	●	●	●
A look at what Shazaan's Mouse Plus can offer					
UTILITIES					
• *Multi-Dump*	14	●		●	
Learn to print over the whole width of the paper					
• *Through the Round Window II*	86	●		●	
The second part of our window environment operating system					
• *Musi Load*	91				●
Add a few vibes to your loading time					
• *Plus/4 Assembler*	93	●		●	
INSIDE YOUR AMIGA					
• *Amiga News*	35				
• *Amiga Gossip*	38				
• *Amiga on Line*	44				
A look at what Compunet can offer					
• *Help at Hand*	47				
A handy pop up utility					
• *Amiga Games*	51				
A look at what's new on the games front					
• *Superbase Professional*	59				

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DATA STATEMENTS

Smooth Operator

If you've ever experienced a computer reset caused by a surge in the mains supply then an investment in a power filter such as Warwick Products' Supa 7 could prove worthwhile

Rated at 7 amps – more than enough for most computer systems the Supa 7 serves two useful purposes First it smooths out any voltage spikes caused by light switches or by electric motors in heating systems, refrigerators or deep freezers Secondly the unit filters out radio frequency interference (RFI) which can emanate from many sources

Excluding VAT, the price is £14 95 plus 50p postage and packing

Touchline
***Warwick Products** 50 Marsh Wall West India Dock London E14 9XJ Tel. 01-538 2535*

The Supa 7 Power Filter

Little Brother

A [illegible] printer launched by Brother [illegible] promises a print speed [illegible] cps The compact Brother 1209 has a dual interface and three resident [illegible] Prestige Gothic and Orlando

Priced at £265 the 1209 has Epson and IBM compatibility for both sheet and tractor feed paper

Touchline
***Brother Computer Peripherals Division Jones+Brother** Shepley Street Guide Bridge Audenshaw Manchester M34 5JD Tel. 061-330 [illegible]*

N-n-n-n-Cascade

Billed as [illegible] true [illegible] the [illegible] based [illegible] Hardcastle

19 part 1 – Boot Camp – [illegible] the raw 19 [illegible] in the game Boot Camp contains detailed graphic images and [illegible] as the recruit progresses through basic training on a playing area (the exit zone) which is included in the package as a full-colour map

On completion of basic training [illegible] until the second part 10 part 2 – Vietnam, is released later this year

Boot Camp is available on C64 cassette for £9 95 or £14 95 on disk

Touchlines.
***Cascade Games.** 1 3 Haywra Crescent Harrogate North Yorkshire HG1 5BG Tel 0423 525425 **Ansaphone** 0423 504663*


John Lewis and Nigel Stephens take a look about basic training on the Yorkshire Moors

Re-Inkarnation

Tired old printer ribbons can be given a new lease of life with MGA Microsystems Macluker unit

Whether the ribbon is made of felt silk cotton or nylon the Macluker unit will evenly re ink it via a unique capillary mesh The manufacturer claims that the use of this unit can extend the life of a ribbon by as much as 40 times for only a few pence each time it is recharged –

Actual prices for any cartridge or reel system can be supplied on application to MGA but typical costs range from £60 to £80 inclusive of VAT and postage

MGA also market Supra Corporation's 64K buffer for Centronics printers Known as the Microstuffer this unit has the added benefit of being able to reprint the buffer contents at the touch of a button

The MicroStuffer comes complete with a Centronics input socket and output lead for £59 09 plus VAT

Touchline
***MGA MicroSystems** Pear Tree Appledore Kent TN26 2AR Tel 0233 83573*

Star Turn

The NL-10 is dead long live the LC 10! At the recent Which Computer Show Star Micronics announced the launch of a new low-cost printer with a higher specification but at a lower cost than the NL 10 that it replaces

The new multifont LC-10 offers printing speeds of 120 characters per second in draft mode and an NLQ speed of 30 cps six resident fonts and seven print pitches selectable from a comprehensive front panel

Another desirable feature which has been included on the new machine is a push feed tractor mechanism which means that paper wastage is kept to a minimum especially when using short form tear off sheets such as address labels

An automatic paper parking capability removes the need to remove and relace tractor fed paper before and after feeding in single sheets for those important one-off missives

The retail price of the LC-10 is £229 excluding VAT

Touchlines.
***Star Micronics UK** Craven House 40 Uxbridge Road Ealing London W5 2BS Tel. 01 840 1800*

DATA STATEMENTS

Budget Booster

Following the recent tie up between Mastertronic and Activision, the limited deal for Activision's back catalogue has been increased to include all the present and future products on the Activision label The first batch released in January included Eidolon, Ball Blazer and the smash hit of several years ago Ghostbusters

Rod Coussens of Activision commented "In a business where shelf life may be short lived, the ability to recycle through budget labels is beneficial to all concerned We are pleased to forge this association with Mastertronic and look forward to an on-going successful relationship"

In a reciprocal bout of mutual back slapping a spokesperson at Mastertronic responded "We are delighted with the deal with Fred the Activision range reinforces our policy of only releasing the very best quality products on the Ricochet label

The Activision/Ricochet titles will be released at £1 99 and £2 99 for all 8-bit machines and £9 99 for 16-bit versions The deal is important for the image of Mastertronic which is suffering a little under the new Gallup poll sampling system Despite extremely powerful shouts of 'humbug' from Mastertronic Code Masters are still claiming to have ousted them from the top slot in budget software sales

Touchline
***Mastertronic** 8-10 Paul Street London EC2 **Tel** 01-377 6880*
***Activision** 23 Pond Street Hampstead London NW3 2PA **Tel** 01-431 1101*

Alternative Entertainment

In the right corner Roger Hulley grapples

Alternative reputedly the fastest growing software house has cast a wider net to trawl in the rights to products from Piranha Audiogenic Incentive and Bubble Bus

In less than a year Alternative has charted 30 times and for one heady period during the last PCW Show it held the top slot in the C16 Amstrad, Spectrum and consequently the overall charts

Roger Hulley Alternative's Managing Director boasts, 'I don't think the public could ask for better value I can see no reason why products such as Trap Door or Popeye at £1 99 should not dominate the charts for months to come'

Also on the Alternative menu are Moon Cresta from Incentive and Audiogenic's Psycastria

Touchline
***Alternative Software** Units 3-6 Bollcyate Estate Pontefract West Yorkshire WF8 2LY **Tel** 0977 797777*

A Change of Place

September sees a change of venue for the PCW Show from Olympia to the larger main hall of Earl's Court

"The Show has outgrown Olympia both in terms of floor space and the increased number of visitors that it now attracts" and PCW Show manager Mike Blackman He then explained "It is a move that we have wanted to make for some time and the increased demand for space in 1988 means that the move has to be made now"

The move enables Montbuild the Show's organisers to divide the exhibition into three sections instead of the usual two The Business and Leisure areas will still continue but the third area can now be developed to appeal to serious home computer and small business users

Each section will have its own separate entrance which should relieve the businessmen who had to queue for extended periods during last year's Show The extra space inside each hall will also allow the companies to indulge in more ambitious displays than previously permitted at Olympia

This year's Show is scheduled for 14-18 September and the new venue is also more easily accessible to what promises to be yet another record breaking crowd of computer users

Touchline
***MPA Ltd** 8 10 Hallam Street London W1N 5LF **Tel** 01-636 3205*

Hewson v Telecomsoft

Following an injunction and subsequent court case in which Telecomsoft and Hewson contested publishing rights for Morpheus and Magnetron it was decided for the moment that Telecomsoft could go ahead and release the titles on their Firebird label

For those who may not have heard the story the two games programmed by Graftgold were originally planned for release by Hewson and the machinery was already in motion for the promotion of the programs at last September's PCW Show Of the eve of the show, Andrew Hewson was horrified to learn that Steve Turner Graftgold's boss and author of Magnetron had signed a programming contract with Telecomsoft for all future Graftgold products and separate contracts for Magnetron and Andrew Braybrook's Morpheus

In a single blow Hewson was not only severed from what he imagined would be his two Christmas hits but also from his greatest asset Andrew Braybrook – author of Paradroid and Uridium

Prior to the announcement it was whispered that Turner and Braybrook were searching for a new publisher and it was also rumoured that they had already been flirting with Electronic Arts

Although Telecomsoft have been given the go ahead to publish the Hewson versus Telecomsoft dispute will not reach a conclusion for several months and Andrew Hewson will not cease the fight until the bitter end

DATA STATEMENTS

Mini Office Moneyspinner

It's not often that a software package gets the TV plug on television the last software package that received heavy promotion on the haunted goldfish bowl was Rainbird's Starglider on Get Fresh. For a business package to receive a mention is an even rarer occurence but this is the accolade which Mini Office II has received.

Channel 4's consumer finance show Moneyspinner selected the Mini Office II suite of programs as the best of four home computer finance packages.

The challenge came from Supercalc 3, Money Manager and Planit — a second product from Database, the manufacturers of Mini Office II. Each program was judged on three main criteria: value for money, ease of use and ability to tackle the job in hand successfully. On all counts Mini Office II scored maximum points and, according to Moneyspinner's producer, Belinda Giles, would be most suitable for our viewers attempting to produce accounts on their home computer. Mini Office II is available for the C64 and in an expanded form for the C128 for £14.95.

Touchline

***Database Software** Europa House, Adlington Park, Adlington, Macclesfield SK10 5NP. Tel. 0625 878888*

Straw Poll

If anyone can find a Commodore 64 program disk that can't be loaded from the latest version of the Excellerator Plus disk drive, Evesham Micros' managing director Richard Austin will supply a free Amiga 500. In his own words he expresses his confidence in the Excellerator's compatibility by saying "If we have to give away more than two I will eat my hat".

The competition has been arranged through Evesham's PR representatives Solution Public Relations because Evesham Micros is keen to ensure that the Excellerator is compatible with all Commodore 64 software designed to load from the 1541C disk drive. This would further enhance the growing reputation of the streamlined Excellerator which retails at £159.95 that's £40 cheaper than the Commodore drive.

Relating to the competition Richard Austin commented "We have tried to make the Excellerator as efficient as possible but we cannot test every computer game because there are too many of them. Who better than the public to attempt this task for us?

"Despite the scale of this competition I doubt whether we'll have to give away many Amigas."

All entrants have to do is to get a postcard and write down the name of any Commodore 64 game (obtained from a computer shop) which is compatible with the 1541C but not with the latest Excellerator Plus. The first entry received for each different program will win an Amiga. Postcards should be sent to Evesham Micros c/o Solution Public Relations, Carlton House, 11-12 Marlborough Place, Brighton BN1 1UB. The closing date is 1st March 1988.

Evesham Micros' Richard Austin prepares to enjoy a meagre diet

Touchline

For the competition

***Solution PR** Carlton House, 11-12 Marlborough Place, Brighton BN1 1UB*

Product enquiries

***Evesham Micros**, 63 Bridge Street, Evesham, Worcestershire WR11 4SF. Tel. 0386 765500*

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Programming

If you've got a brill ideo for a game, but you're not too sure how to go about it, this article will provide the tips and advice that will put you on the right road

By Tony Hetherington

Have you ever looked at a game or read a review and thought that you could write a chart topping game? If so then why not give it a go. The worst thing that could happen is that you're left with a game that's simply enjoyed by your friends or you could become the first software millionaire!

Before we start it is important to remember that not everyone has your outlook on games and the market, so if you hit a brick wall back off and try elsewhere. This can be a frustrating business but don't add to your problems by engaging in arguments fueled by dented egos.

So you want to write a game? The first thing you have to do is find answers to the following important questions.

- *What type of game is it going to be?*

Is it going to be an adventure, an arcade game, a sports simulation or a war or strategy game? It is an important choice since arcade games sell considerably more than others.

- *Is it original?*

If it isn't then forget it, as no one is going to consider the 81st version of Gauntlet, Space Invaders or Marble Madness. You can only con some of the people some of the time and you're unlikely to get away with a ripped-off game. After all how would you feel if someone stole your ideas?

- *Which computer will it run on?*

The C64 still has the biggest market and so a game for this machine should sell well. However you should also think whether the game can be converted to other home micros, does it need the extra capacity offered by disk or can it be updated to become one of the growing band of Amiga games. Whatever machine you choose you should try and push it to its limits.

- *Is this game your best idea?*

It's surprising how often a programmer gets stuck in a project and shelves other ideas until they've finished what they're working on. Sometimes the best idea never sees the light of day.

- *Is the computer necessary?*

An odd question but an important one when you consider the number of games of the book, film and board game that are appearing on the shelves. If the computer version is actually harder to play then it's unlikely to be accepted.

- *Will the game have lasting appeal?*

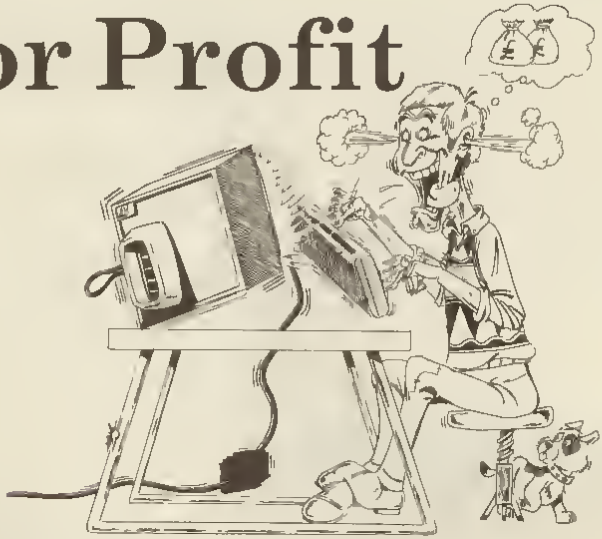
It takes almost six months for a game to reach the shops so don't make it too topical as it will be out of date by the time it's released. For example at the time of writing this the news is full of storms, floods and stock market crashes but by the time you read this.

Once you've pondered these pertinent points you should have a working idea. If you haven't then don't despair as software houses are always on the look out for programmers for conversion work or to team up with a games designer who can't program. The best way to approach them is to show them what you can do either through demo programs or your version of a coin-op game.

Writing the Game

When you write the game use a well known development toolkit or

for Profit



assembler as well as commercial sprite editors and graphic packages as this will make life easier

Include as much animation and graphic detail in your game as you can possibly cram in as this will not only grab the eye of the software manager but also the buyers and reviewers For example the most memorable part of Odin's Heartland is the way the skeletons crumble when they're shot

Leave room for a sound track or sound effect if you can't do them yourself but ensure they can be turned off as many players have their games going late into the night

Include features such as high score tables load and save game options and joystick and user definable keyboard options to make your game as playable as possible If you've got room include a demo routine or short on-screen instructions so players can load and go

Write your program using clear structured routines and keep them well documented It may sound like hard work but it will actually make things a lot easier particularly when your debugging or make changes Software houses nearly always want changes

When you've finished coding, test and debug it and ensure that you actually like playing it If you don't then nobody else will When you think you have the best version save it several times try it on your friends and then submit it to a software house

Submitting Games

It is important to ensure that you include all the relevant information including details of the machine requirements a short description of the game describing why it's different and hints or saved game positions so that the software evaluator can see as much as possible as quickly as possible

This is all part of making it easy for the software house to say 'yes!'

If you haven't finished the game then send at least a demo routine or some sample graphics as it's very difficult to get an idea across to a busy man only on paper

Send the game to the software house that's right for your type of game For example you'll probably be wasting your time sending an adventure to Elite or a shoot em-up to Level 9

Finally don't give up It is unlikely that your first effort will be accepted on the first attempt so take constructive criticism and learn from your mistakes

How much can you earn?

The papers were once full of the thousands that young programmers were making and I'm afraid these accounts are largely exaggerated However if a game is accepted and sells well on more than one format it could bring in a tidy sum Therefore you should be careful about what deal you accept Some software houses offer a fixed sum while others have a royalty payment paid for each game sold You're probably better off with a royalty deal since it also shows confidence in your own game Either way ask for an advance and a contract and check the small print

There is no real need to involve lawyers and secrecy clauses to protect your work since I find that sending a copy of the program to yourself by recorded delivery is proof enough

If you think this is all too much then why not start the ball rolling and send off a program to *Your Commodore* If it's accepted you'll receive a cheque for your program and you'll be well on your way to programming for profit!

Multi Dump

Teach your Commodore to print across the full width of the paper on your Epson or Canon printer

By David Wilkinson

With this handy utility high resolution and character screens can be dumped at full or half paper width by simply pressing a function key. A user friendly BASIC program is provided to simplify the setting up of the machine language program. Screen location addresses can be given in decimal or hex and you can also dump screens which use special character sets. Any printer which uses the Epson set of control codes can be used when connected to the user port on the C64.

The Epson LX80, the Epson LX80 the Canon PW-1080A or the Kaga Taxan printers will all work correctly with Multi Dump. You will need a cable with a plug for the C64 user port on one end and a Centronics printer plug on the other end. These can be bought made up for about £15 or you can make up your own as described in the October 1987 issue of *Your Commodore*.

Typing in Multi Dump

The machine code program which does the work is given in program 1 as a self checking BASIC program. Type this in and save it before you run it. Once you have it safe type RUN. The chances are that you will have made a typing error and if so the program will tell you which line the error is on. Correct the error and RUN it again. When there are no more errors you should save the program again.

You can now test Multi Dump by typing SYS52662 and then pressing function key f5. Provided your printer is switched on and connected correctly you should get a half page width dump of your screen on the printer. If you have additional blank lines on your printout don't worry, this can be corrected by using program 2, which is the BASIC set up program for Multi Dump.

Using the Set-Up Program

Press RUN/RESTORE to switch off Multi Dump and type NEW (I hope you remembered to save your corrected program!). Now type in program 2 and save it. Notice the gaps in the line numbers, these gaps are for lines which will be added later. A dump of the first page of the set up program is shown in figure 1. As you can see the set up program asks questions which must be answered with Y for yes or N for no. Answering Y for each question will restore the default values to the Multi Dump machine code. If you answer N to any of the first three questions you will then be asked for the location addresses of the screen or character set you want to use.

These can be given as decimal values or if preceded by the dollar sign as hexadecimal values, e.g. the program will accept either 57344 or $E000 as equally correct forms at input.

You can decide where on the page you want to position the small screen dump. Typing in zero puts the picture on the left half of the page while 40 puts the picture on the right half.

If your printout has narrow black bands across the page answer N to the narrow line feed question. This will increase the line feed from 23/216 inches to 24/216 inches and should correct the problem. If your printout has white bands between each printed

Continued on page 16

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line this is because the printer is set to produce an automatic line feed for each carriage return. To eliminate this, answer N to the line feed question.

The machine code for Multi Dump is tucked away at the top of the spare memory block – from 52646 ($CDA6) to 53247 ($CFFF). This means that it can stay there without interference from BASIC programs and is safe even from many machine language programs which are stored at 49152 ($C000).

Once you have installed Multi Dump you can load your own BASIC or Machine language program, use it to draw a picture or create a screen from CBM characters and then press the appropriate function key to get a hard copy. (This will work only if your program does not overwrite Multi Dump or change the interrupt vector.)

Save the modified set-up program under a new name and then load and run program 1. The machine code for this program is now in memory and can be saved by typing in the following commands directly:

```
POKE43,166:POKE44,205:
POKE45,0:POKE46,205:
```

then for tape users:

```
SAVE "MULTIDUMP/C"
```

or for disk users:

```
SAVE "MULTIDUMP/C",8
```

Your machine code program will then be saved from memory. This procedure alters the memory pointers and to restore them to the usual values you must switch the computer off and then on again. For tape users it is important that the machine code program is stored immediately following the modified set up program.

Printing your Character Screen

Press key f5 or f7 and Multi Dump will give you an exact copy of your screen as you see it. This means that you can use all the graphic characters, or the lower case character set and they will all be faithfully reproduced. The default character screen is the normal text screen which starts at 1024 ($0400) but the BASIC set up program allows you to change this to any memory block you want. If you wish, you can also use Multi Dump with special character sets.

Printing your High Resolution Screen

Pressing key f1 or f3 will result in the high res screen being dumped to the printer. The high res screen is stored at a different memory location to the normal text screen. Multi Dump uses as a default the memory block at 8192 ($2000) which is used by many drawing programs.

However the BASIC set-up program allows you to alter this to any block you wish. The drawing shown in figure 2 was drawn using Basic Lightning, which stores its high-res screen under the Kernal at 57344 ($E000).

You can retrieve the high-res screen data from any memory block but if you store your screen in the block starting at 49152 ($C000) it will overwrite Multi Dump!

See listing on page 102

Figure 1

```
MULTI-DUMP
PRINTS HIRES & CHAR SCREENS
ON CANON & EPSON PRINTERS
USING PARALLEL I/F IN USER PORT
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HIRES SCREEN ADDR=8192($2000) OK? Y/N N
 GIVE NEW ADDRESS - $4000

CHAR SCREEN ADDR=1024($0400) OK? Y/N Y

STANDARD CHAR. SET OK? Y/N Y

SPACES BEFORE START OF SMALL
 PICTURE = 20  OK? Y/N N
GIVE NO. OF SPACES (0-40) 0

NARROW LINE FEED OK? Y/N Y

LINE FEED REQUIRED? Y/N
```
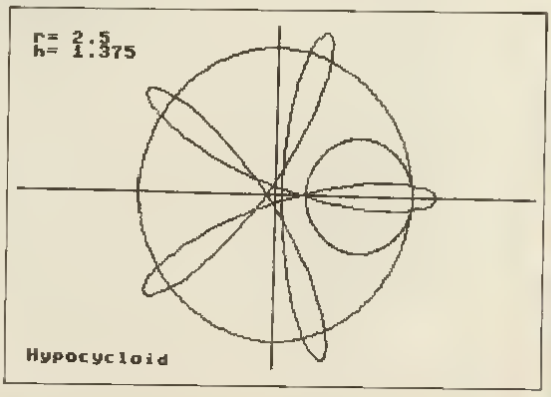

Figure 2



Simplifying Multi Dump

You can load and run programs 1 and 2 each time you want to use Multi Dump, but it is much more convenient to store the machine code as a program and load this automatically every time you run the set-up program.

To do this you need to modify the set up program by loading it and adding the following lines:

```
30 A=A+11:FA=1:GOTO130
100 IFA=0:GOTO130
110 IFPEEK(52654)=27AND
PEEK(52655)=51GOTO130
```

and for tape users:

```
120 LOAD "MULTIDUMP/C"
```

or for disk users:

```
120 LOAD "MULTIDUMP/C",8,1
```

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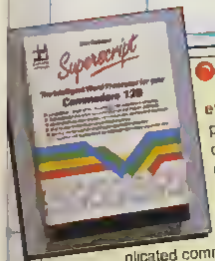

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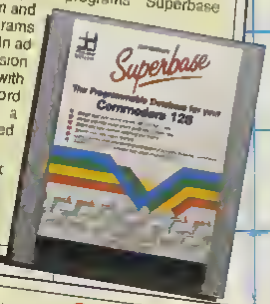

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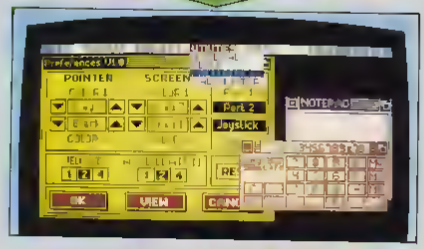

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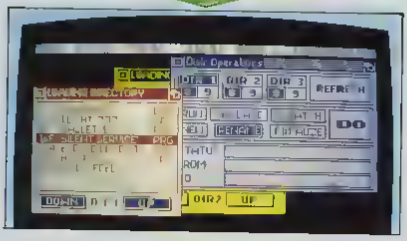
WINDOWS



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DISK WINDOWS
Load, Run, Rename Validate Scratch, Initialise Fast format disks

TAPE WINDOW
Activates fast and normal modes

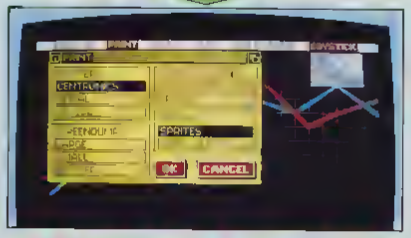
PRINTER WINDOWS
Select different printers, such as Commodore serial, Centronics RS 232 Colour printers

REQUESTER WINDOWS

DISC BASED USER WINDOWS

CLOCK
Real Time Clock, with Alarm.

FREEZER MENU



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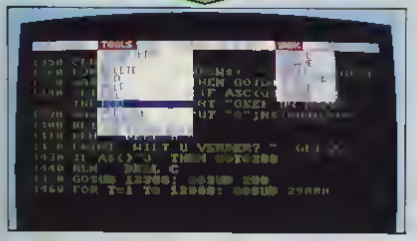
PULL DOWN MENU



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Label Linker

Learn the secret of labelling for BASIC programs which allows easy appending of separate modules

By David Kelsey

Although BASIC 7.0 provides many excellent commands to allow structured programming, it leaves a little to be desired on the statements which provide line numbers. It is always a nuisance to have to guess the line number that you want.

Suppose you want to jump to a subroutine, which you haven't coded yet you must guess the line number that you think you might start coding at. Almost always this is not the case.

It would be so much easier to type 'GOSUB " CLEAR SCREEN" ', then later define the "CLEAR SCREEN" label to denote that the following code is where this GOSUB is pointing to.

Another useful feature would be if this subroutine wasn't actually in the main program but was the name of another subroutine which was stored on disk or tape.

This would provide the user with the ability to call subroutines which had been previously written and tested without having to retype them in.

This would then allow libraries to be built, and if you update one of the library modules all programs using it will be modified without having to alter all programs. All you have to do is relink them.

All this provides more facilities to do structured programming and to encourage better programming techniques.

Defining Labels

As already described, we use labels instead of line numbers for statements such as GOSUB, GOTO, TRAP, RESTORE etc. This is done by just replacing the line number with text. The text must be enclosed by inverted commas, e.g. GOSUB "TEST PRINT".

We also need a way to define which line numbers refer to labels, and this is done by using the REM statement. The following example shows how to define a label.

REM $"CLEAR SCREEN"

The text within the inverted commas is the label, and the $ signals the program that this text is a label.

There are restrictions put on labels, and the first of these is a label cannot be greater than 16 characters. Also you must define a label as you cannot just GOSUB "".

Linking

You can just have one program which uses labels referencing lines in other places within the same program, but the Label-Linker allows much more than that.

It provides the facility to join several separately saved programs and create one large BASIC program. Not only that, but you can reference a label from one program which has been defined in a totally separate program. This means however that you cannot use the same label name in two different program modules that you

want to join, as the Label-Linker will not know which one you are referring to. This process of joining is called LINKING.

The separate programs that are to be linked together need not necessarily be complete programs, but could just be small subroutines or even just blocks of DATA statements. These programs are called MODULES.

The Label-Linker will require the names of the modules that you wish to link and the order that you give them will define the order of the final BASIC program.

There is one extra facility that the Label-Linker provides. If you have defined a subroutine and saved it instead of having to give the subroutine a label at the beginning of the routine, you can just reference this routine by using the name you have saved it under as the label name. For example, if the routine was saved under the name "CLEAR SCREEN", then all you have to do to call this routine would be to:

GOSUB "CLEAR SCREEN"

No 'REM $' line is needed in the routine.

'CLEAR SCREEN" is treated as a label, and so must be unique. An error would result if you have a line 'REM $ "CLEAR SCREEN"' in any of the program modules as well as a program.

While coding a program using labels it is still possible to renumber the program, but obviously any statements with a label will remain unchanged.

Below is a listing of this type of use. It has three separate modules which are described under their own headers.

"MAIN"

```
10      DIM A(20,15)
20      RESTORE "SCREEN
        DATA"
30      FOR L1= 0 TO 20
40       FOR L2=0 to 15
50        READ A(L1,L2)
60        NEXT L2
70      NEXT L1
80      GOSUB "CLEAR SCREEN"
90      GOSUB "PRINTER INIT"
100     GOSUB "CALCULATE"
110     etc
5140    REM $ "CALCULATE"
5150    etc
5200    RETURN
52100   etc
```

"SCREEN DATA"

```
10      DATA 192,193,155 etc
20      DATA etc
30      DATA etc
```

"PRINTER CONTROL"

```
10
20
30
40      GOSUB "CALCULATE"
50
60
100     REM $ "PRINTER INIT"
110     OPEN4,4,7
120     PRINT # 4
130     RETURN
140     REM $"PAGE ADVANCE"
150     ST$=CHR$(147)
160     GOSUB "PRINT ST$"
170     RETURN
```

"PRINT ST$"

```
10      PRINT # 4,ST$
20      PRINT#4
30      RETURN
```

Note that you can link program modules or just data modules. There is a danger with data statements. If you include a module which reads its own data statements and you have another module which reads data statements then there is the possibility that the modules could start reading from the wrong position or the wrong set of data statements. To deal with this situation the RESTORE statement can be used to inform BASIC where to start reading from. The RESTORE statement also works with labels as shown in the above example.

Using the Label Linker

Type in the program 'DATA LOADER' and save it under that name. Then type in the program 'BOOT LOADER' and save it. Type 'RUN "BOOT LOADER"'. The loader will generate the required program and save it to disk under the name 'LABEL LINKER'. To then execute the label linker type: BLOAD "LABEL LINKER" B1,BANK1 SYS8192

The Label Linker requires certain information. This will be prompted to you.

The questions are:

Start address (1C01) ?

This allows control of where the final BASIC program will be stored in memory. The practical use of this is to allow code programs to be stored in the lower half of memory, with the BASIC program above it. Then your BASIC program can tell these machine code routines. It also lets the user use memory not usually reserved for BASIC (e.g. the section at $1300).

The default is the usual start of BASIC text '1C01'. Once you have saved the program, and reset the computer, if you use the DLOAD command, then the program will be re-loaded at wherever the BASIC start is. If not at the address you may have linked it to. This won't affect the actual BASIC program, but it won't be in the part of memory you want it. To get over this, you can either re-direct the start of BASIC using the LOADER programs given and load using DLOAD as usual, or you could use the BLOAD command, which will place it in the area in memory that you specified when running the Label-Linker. However, because BASIC hasn't been told where this program starts, it will either not recognise that it is there, or you will just get rubbish displayed when you try and LIST it.

Display link map on scn or ptr (s/p)?

At the end of the linking, a link map is produced (this is explained later). This tells the system whether you want to output the map to the printer or screen.

If nothing is entered or an unrecognisable character is entered then the output is defaulted to the screen. From here all that is required are the modules to be linked. The first prompt is:

'ENTER MAIN MODULE NAME'

This asks for the main program controls and the use of the external subroutines.

The prompts are as follows:

'ENTER MODULE NAME'

These are the names of the programs containing the subroutines. Just pressing enter on any of these prompts will start the Label-Linker processing producing the final object program.

Both the entries for 'MAIN MODULE' and 'MODULE' names are the same. If you just enter the filename, then it will try to load from disk, device 8. However the medium where the modules come from can be varied. A prefix can be given in the form of 'p' Filename', where 'p' is the device where the module comes from and 'filename' is the name of the module to be included.

The following table gives the possible options for devices.

P	Device Number
a	disk device 8
b	disk device 9
c	disk device 10
d	disk device 11
t	tape device 1

It is possible to add devices onto this and define your own prefixes, for example a virtual (RAM DISK) disk at device address 12 could be given a prefix of 'h' This is described in the expansion section

Note that whatever order you give the program names, they will have the same order in the final complete program

When the Label-Linker replaces labels with line numbers, it doesn't necessarily replace it with the line number that the label is defined on It replaces it with the first non-REM line number after the label for example

```
150  GOSUB "TEST PORT" —
This line is replaced by
GOSUB 1090
1040 REM $"TEST PORT"
1050 REM THIS SECTON OF THE
1060 REM PROGRAM TESTS TO
SEE
1070 REM IF A PORT SIGNAL HAS
1080 REM HAS CHANGED
1090 PP=PEEK(DEC("DD00"))
```

Link Map

This just gives some general information about what has been done In the above coded program the following link map would be produced

Label Name	Type	Line No
main	extrn	
screen data	extrn	
printer control	extrn	
print st$	extrn	
calculate	intrn	
printer init	intrn	
page advance	intrn	

The ' ' just refers to the fact that a line number will be displayed It doesn't matter for this example what they are

The line numbers say what line number this label is replacing not where the label definition can be found Remember that when linking the Label-Linker locates the first 'non-REM' line after the label definition

Messages

The Label-Linker has a lot of error checking and will display any relevant error messages These are as follows

device 'x' not present – this means that a device which has been assigned the prefix 'x' (x being just an example) is not communicating with the computer

file 'example' on device 'x' does not exist – the file name example could not be loaded as the file couldn't be found Or no disk is in device 'x'

'x' has illegal device number – a prefix has been defined with a device number which isn't in input medium e g you might have selected the device number for the screen It isn't possible to load from the screen

no memory left to load 'example' – all memory has been used up cannot load this module or any other module after it You can either reduce the size of the program or the BASIC start address

unknown error on loading 'example' – the file 'example' could not be loaded due to some kind of error not listed above

line no 11111' in module 'example' contains unresolved reference – the module example could not be renumbered because the line 11111 has a statement which refers to a line number which doesn't exist in the module

over 65535 lines in complete program, unable to continue – while joining the modules together the number of lines so far exceeds the maximum possible in BASIC Lines would have to be concatenated to reduce the number of lines in a module (I would be very surprised if someone made this error !

unable to update following line, too long – the line listed below cannot be updated because when the labels are replaced by line numbers the line is too long to cope with Another way this error could occur is if you have entered a line using the shorthand method which allows longer lines to be entered If this error does occur, then the offending line will have to be split into two separate lines Also note that the line has been renumbered

unable to update lines due to lack of memory – while trying to replace labels with line numbers all of memory is used up This is not easy to solve

an unknown error has occurred during renumbering or trying to replace a line another error not mentioned above has occurred (should never be displayed)

no label defined in line below – the line displayed has a statement which can have a label, but there are no characters within the inverted commas e g GOTO " " will cause this error

label too large (>16) in line below – a label has been defined or used which is greater than 16 characters

label 'example' already defined – the label example has been defined at least twice You are only allowed unique labels within the whole of the program You cannot use the same label in different modules

no line number, label or statement – a statement requiring a line number label or more statements hasn't got any e g 10 IF A=1 THEN

Label 'example' not defined – the label 'example' has not got a definition in any of the modules i e there is no line with the statement REM $ "EXAMPLE

Labeling Statements

The following statements can have labels instead of line numbers

GOTO
GOSUB
ON GOTO
ON GOSUB
RESTORE
RESUME

Commands such as RUN LIST etc CANNOT have labels even if they are used within a BASIC program

These commands can be expanded on If new commands are added to the BASIC then if these new commands use TOKEN crunching then they can be added to the Label-Linker

See the section on ABILITY TO UPGRADE' for further information

Final Notes

During the time the Label Linker is running NEVER press RUN/STOP and RESTORE If you have typed something wrong, or you just want the Linker to stop then you will have to use the RESET button

Another thing that you may find useful is to set up the boot sector for the Label-Linker To load, all you

would then have to type in 'BANK 1 BOOT'

It is possible to have the Label Linker permanently loaded but you would have to redirect the start of BASIC variables to at least the address $3090

The Label Linker does its own renumbering so when the program has been linked, you will find the line numbers in steps of 1 starting at 1 If this is not satisfactory you can just RENUMBER the program

Ability to Upgrade and Patches

As mentioned earlier it is possible to upgrade this program to allow for extra devices or mediums for modules and it is also possible for it to cope with extra commands which may also use line numbers All the statements within BASIC 7 0 which use line numbers have been included but if BASIC is expanded then this program can cope with this However the new BASIC statements must be token crunched for this program to recognise it and as one token labels are not possible in BASIC 7 0 then two token labels must be used As the tokens $fe and $ce have to be used to their full extent expansion has been based around the user of these For example if you add a new BASIC statement 'CALL', and when interpreted by the BASIC which has been modified, it is crunched to the tokens '$fe $44 then these values could be added to the Label-Linker such that if a label was placed after 'CALL' instead of a line number then the Label Linker will recognise it as a label and replaced it with the appropriate line number

A utility program has been provided to do this for you

The Utility Program

The utility program has been supplied in separate modules for you to use the Label-Linker on

Each program should be saved under the names given in the comment block at the start of each module The four modules are
UTIL MAIN
UPDATE DEVICE
UPDATE COMMAND
TXTCNTL MOD
(This is a simple text input and display module which could be modified and incorporated into your own programs if you wish)

Run the Label-Linker as explained above Press enter for the first prompt and select screen or printer for the link-map When prompted for the main module name type 'UTIL MAIN' and press return For other prompts type in the following order
UPDATE DEVICE (return)
UPDATE COMMAND (return)
TXTCNTL MOD (return)
(return)

It should now say linking in process

If all goes well, the messages pass 1 and 'pass 2' will be displayed and then after a little while the link map will be printed

Save the program under the name 'LABEL-UTILITY'

Enter and save the program 'BOOT UTIL'

To run the utility type 'RUN "BOOT UTIL"'

A menu is displayed giving the options available

The first option will let you change the device prefixes with their corresponding numbers

The existing ones are displayed and the program prompts for a prefix Once entered, you give the device number you want to correspond to that prefix

If you enter a prefix which already exists then the device number will be changed to the new one just entered If you entered a new prefix and there is room in the table then it is added to the table with its corresponding device number

To exist this change just press enter when prompted for prefix

The next two options are used to update the Label-Linker to recognise new commands which have been wedged into the operating system The way commands are stored in BASIC programs are in the form of special values As BASIC 7 0 used all the single byte values possible for their commands it had to use double bytes to define commands The commands can be expanded on using the same technique but if a new command uses line numbers then you may want the Label-Linker to know about these new commands

The current table contents are displayed and the program prompts for a command The two commands are 'i' for insert or 'd' for delete

When either option is given the program then prompts for a token If possible the program then tries to either insert or delete the token from the table If it can't then a message is displayed saying what went wrong To exist this screen just press enter on the command line

Option E ends the utility and updates the Label-Linker It renames the current version to OLDLINKER' deleting any previous copy and puts the new version onto disk under the name 'LABEL-LINKER'

Cassette Based Users

This program has been designed with disk users in mind, but should be possible to update the loader and the BASIC programs for use with a cassette recorder The main changes being the BLOAD, and the BSAVE commands The BLOAD could be replaced with 'LOADF "",1,1 and specifiying the particular bank to be loaded

BSAVE is a little more difficult Either the monitor has to be used or there may be ways of calling the save routine and specify the required parameters with BASIC a programmers reference guide would be helpful

Extra Program

Included also in this package is a simple compactor program It will remove all REMs and spaces from a program For example it could be used to remove all the labels and the 'object' program by removing all REM statements if desired

The loader is similar to the one used by the Label-Linker and will require a 'boot loader' program Type in the loader, then save it under the name 'COMPACT DATA' Load in the program boot loader , and change the 'DLOAD' command to 'DLOAD COMPACT DATA'

Once this is done save the loader under the name 'BOOT LOADER2' To execute the program just type 'RUN "BOOT LOADER2"' The loader will place the compactor in memory then save a copy to disk under the name 'COMPACTOR'

Using the Compactor

To load, type BLOAD 'COMPACTOR' B1
To remove just spaces type BANK1 SYS28672 1 0
To remove just REMs type BANK1 SYS28672,0,1
To remove both REMs and spaces type BANK SYS28672 1 1

See listings on page 102

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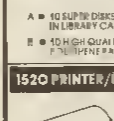

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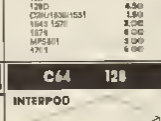

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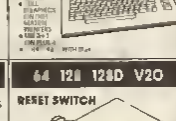

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Games Reviews

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Star Wars

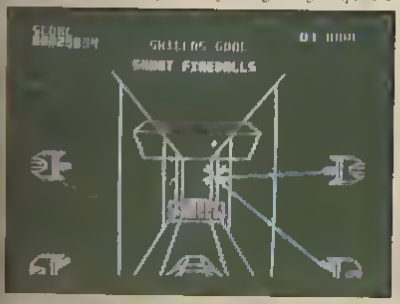
It's amazing how many of the Christmas games were based on arcade originals. Having drained as much as possible from Trivial Pursuit, Domark are now getting back into action games with Star Wars.

The game replays the closing scenes of the first Star Wars film as Luke Skywalker homes in on the Death Star to serve the coup de grace to the Empire's evil plans.

The game opens in deep space as Luke tackles the Tie-Fighters of Darth Vadar's fleet. There's nothing particularly innovative about this phase and the whole section strongly resembles an update on the old Startrek action screens.

Eventually the battered attackers make a run for cover and you can enter the second stage of the battle as you pick your way through the laser defence towers on the Death Star's surface. As you steer your X-Fighter through the forest of towers you have to blast the laser mounts on the top of each of them to pieces in a poor man's Starglider scenario.

The final attack phase is the gauntlet run over and under the obstacles ranged along the trench which leads to the Death Star's exhaust port. Depositing a high explosive



charge into the exhaust port at the end of the trench will finish the Empires war machine and complete the game.

The game isn't spectacularly innovative but its strength lies in the difficulty levels. There are three of these – for some unfathomable reason numbered 1, 3 and 5 – the lowest level is fairly easy and omits the tower challenge but the highest level is sure to get the adrenalin rushing about.

For me, Domark often fall short of the mark but if you want sweaty action you might like to give this a try.

A C E

Touchline
Title *Star Wars* ***Supplier*** *Domark, 22 Hartfield Road London SW19 3TA* ***Tel*** *01-947 5622* ***Machine.*** *C64* ***Price*** *£9.95 (Cs) £12.95 (Disk)*
Originality *3/10* ***Playability*** *7/10* ***Graphics*** *7/10* ***Value*** *6/10*

Gary Lineker's Superstar Soccer

Football games seem to divide into two groups – you either play on the field where the International Soccer is King or watch from the sidelines in games like Football Manager. Gary Lineker's Superstar Soccer is set to change that as you not only select your team but also decide tactics and play either as the centre forward or the goalkeeper.

To play the full game you will have to buy a disk drive or be content with the severely cut down cassette version in which you only play the games themselves and miss out on runs in the cup, promotion and relegation battles and the chance to improve your squad by training, delving into the transfer market or recruiting new players!

The cassette version does have all four league tables and starts you at the foot of the fourth but all you can do is play single games against human or computer opponents. These football matches are six aside games which can be speeded up to 15 times normal time. You can control either the

goalkeeper and hopefully make spectacular saves or lead the goal rush as the centre forward. The other four players are computer wingers and defenders whose actions depend on the tactics you select whenever the game stops because of a goal, halftime or a throw in, corner or goal kick. These tactics determine how much of the defence will push up to support the forwards and whether the computer players will pass to you, the centre or shoot at goal themselves.

To take a shot you simply hold and release the fire button when the gauge at the top of the screen shows the direction you want to shoot in. To pass you must tap the button and push the joystick in one of eight directions that determines whether you pass the ball to a specified player, the nearest player or to an area of the field. The fireworks really start flying when the ball is in the air as a press of the fire button will make your player leap to head the ball or even execute a perfect overhead scissors kick to send the ball flying past the keeper into the back of the net!

If you have the disk version then each game becomes more meaningful as a step nearer promotion or towards cup glory. You can select any team to play in either an English or American league and play 7 or 15 games each season even though there are 16 teams in each division.

To improve your chances you will need to strengthen your squad of ten players by trading them for more skillful players or spending some of your initial 250 trading points to send the entire team to a training camp or recruit a youngster and spend trading points to build up his skill. At the end of each season you'll receive more trading points depending on your achievements during the past year.

The object of the game is to win as many games, championships and cups as possible in nine seasons to achieve the highest possible rating. The complete disk version combines both football playing and management in a game for the first time that suffers only from snail-like disk access times. However, even with these considerable delays this is better than the cassette version that has been cut into oblivion and is like playing football with one foot tied behind your back! The marks below are for the disk version. Cassette owners should half the marks as they only get half the game!

T H

Touchline
Title Gary Lineker's Superstar Soccer *Supplier* Grandslam Graphics, 10 Carver Street, Sheffield S1 4FS. *Tel* 0742 756 [illegible] *Machine* C64 *Price* £9.99 (Ca) £14.99 (Disk)
Originality 7/10 *Playability* 8/10 *Graphics* 5/10 *Value* [illegible]/10

Out Run

Well US Gold, you told us that this was the 1987 blockbuster the Christmas number one program and other such hype. In the main you told the truth but there are probably many disappointed purchasers bored after a day's hard driving.

Out Run is certainly an impressive piece of programming but stripping away the original arcade game's high quality graphics and all-action console leaves a fairly average road racing game.

The conversion includes all five of the original routes but once you've mastered the art of overtaking most of the game is played with the accelerator hard on the floor and all you have to do is dodge the scenery.

For total Out Run junkies there is a freebie audio tape from the original which resembles the musical wallpaper currently softening the sound of fast money being cashed up at the local hypermarket. Perhaps there's a hint of a Freudian slip in its inclusion with this package.

If you haven't seen Sega's Out Run – the arcade machine – it involves a cool dude in a hot red roadster with his seat cover by his side. After selecting a five section route he has to get through the traffic to complete each stage within a time limit to win the race and gain the adulation of the crowd.

This is accurately reproduced in the US Gold conversion but it lacks the spark of challenge and addictiveness to make it a worthy contender for the Number One slot. The programming has obviously been tackled with care to include as much detail from the original as is possible on the C64. Unfortunately the compromises necessary to make it fit into the memory has not been compensated for and this leaves a feeling of nice program, shame about the game!

With Out Run we were promised great things but it's amazing how some promises produce things that grate. Out Run addicts may like to buy this as a memory of the great arcade game of 1986 but like most memories it's a poor substitute for the real experience.

A C E

Touchline
Title Out Run *Supplier* US Gold Ltd, Units 2/3 Holford Way, Holford, Birmingham B6 7AX. *Tel* 021-356 3388. *Machine* C64 *Price* £9.95 (Ca) £14.95 (Disk)
Originality 4/10 *Playability* 3/10 *Graphics* 7/10 *Value* 4/10

PETER SHILTON'S HANDBALL MARADONA

Named after the "hand of God" incident during the England Argentina 1986 World Cup match, Peter Shilton's Handball Maradona gives you a new perspective of the football field. You've scored winning goals for your club and country, even managed your favourite team to league and cup glory and now here's your chance to save the day by wearing the number-one shirt.

You begin the game as a class "A" goalkeeper and have to build you way up to class "P" (for Peter Shilton?)

Once you have selected the team you're playing for you are presented with a menu that allows you to practice a few saves, play a game or try for a skill upgrading.

If you play a game you see your goal, which is badly defended by two useless defenders and between one and three opposing forwards. These players will pass or dribble the ball before they shoot at goal so you have to be ready for anything. You even have to save corners, free kicks and penalties. Pushing the joystick left and right will move your keeper across the goal with other directions sending him diving to all parts of your goal.

It will take some time for you to anticipate the forward's move but when you do you'll save some of the eight shots at goal and your side will win. The result doesn't seem important and is mainly there for interest and to give you practice. Your most important task is to improve your skill rating.

Skill upgrading is harder than it seems as you have four shots to save but you fail as soon as you let one in. Succeed and you'll get a four digit code which you can enter when you load in the game another day, so you don't have to replay your hard fought levels.

Although there isn't much to the game (that's all folks) it is surprisingly addictive. **TH**

Touchline
Title *Peter Shilton's Handball Maradona* ***Supplier*** *Bug-Byte, Argus Press Software, Victory House, Leicester* ***Tel*** *01 439 0666* ***Machine*** *C64* ***Price*** *£1.99*
Originality *7/10* ***Playability*** *7/10* ***Graphics*** *6/10* ***Value*** *7/10*

X-15 ALPHA MISSION

I've always had a weakness for vector graphic games ever since I saw Star Wars in the arcade, and so I was delighted to see X-15 Alpha Mission on release. Although the graphics are nothing special, the game is none-the-less addictive.

You play the part of a fighter pilot who possesses great war tactics. NASA have started to receive strange messages that were bouncing off the Moon to Earth, which turned out to be ransom demands for huge sums of money. The threats were from terrorists who were manning a space station and would blow up major American cities and microwave President Reagan unless they were given the lolly.

Blowing up cities is okay, but microwaving President Reagan? You're sent to destroy the space station straight away.

At the start of the game you have to launch the ship into the sky which is quite easy and can soon be mastered. There are three levels of play that involve flying, the first being below cloud level, where you must shoot down helicopters and dodge nuclear missiles.

The second level takes you up into the clouds, where I became airsick, but soon got over it. You just shoot and dodge again, but this time it's against jet aircraft and kamikazi gliders.

Finally we have space, where no one can hear you scream – hmmmm. Spaceships are now your enemy and will attempt to blow you apart. They look rather like the fighters from Star Wars, but then again, this is distributed by Lucas Films. Anyway, once you've blown up the tie-fighters you must then avoid asteroid belts and dock with the spacestation where you have to enter a special code in order to access it. The code number is given at the beginning of each game and changes each time you play.

When you have docked at the space station a capsule is released from your spacecraft and must be gently down onto the surface of the space station avoiding the small meteors.

Once this is done and you have landed you can then begin your assault on the space station.

Eight robots emerge from your space ship and you take control of each one in turn. There are eight different movements (functions) for the robots, but as they are not listed in the instructions you will have to learn them off by

heart These skills can be used to jump other robots and burn away rubble from the planet's surface or even self-destruct but it is wise to do this only when you are near a weapons system which are poles that stick out of the planet You must destroy eight of these in order to blow up the space station, and as you can guess you can't afford to lose any robots

Phew as you can see there is a heck of a lot to do in this game although going by its graphics it is still pretty average looking, and the sound is nearly non-existant, but it's still a very playable game – take it from me **K R**

Touchline
Title *λ-15 Alpha Mission* ***Supplier*** *Activision 23 Pond Street Hampstead London NW3 2PN* ***Tel*** *01 431 1101*
Machine *C64* ***Price*** *£9 99*
Graphics *6/10* ***Playability*** *8/10* ***Originality*** *6/10*
Value *7/10*

ALICE IN WONDERLAND

Beware the Jabberwock my son, the Jaws that bite the claws that catch Beware the Budget bird and shun this dubious Bug Byte catch!

I did think of starting this review with J accuse in large capital letters as APS subsidiary Bug Byte appear to be trying it on and possibly contravening trading standards Is this a rip off or is it a rip off?

It's golden oldie time at Bug Byte and they've dredged this one up from the days when the voice synthesis would be described as revolutionary and the graphics as stunning Today it merely looks sad

'Curiouser and curiouser', exclaims Alice at the beginning of the game and on finishing the first very, very dreary level the curiosity was revealed This is not the Audiogenic multi-load cassette, it's (shock! horror!) the first part of the disk version! As Alice reaches the end of her perambulation along a dragon infested mountain road the screen incites player one to switch on his disk drive to load part 2

Despite my efforts I could not find any scenes to match those depicted on the cassette insert a possible case of misleading packaging methinks

The tawdry gameplay involves Alice on the mountain road being assailed by flimsy, ill advised and ill defined dragons who vanish into some dragonesque afterlife if they touch her Every now and again the dragons change colour to herald the arrival of the Jabberwock After the next colour change Jabberwock arrives looking like a fearsome cockatoo and far less dangerous Now is the time the dragons have waited for as they home in to devour one of Alice's six lives unless Alice gets the Jabberwock first Wow!

Even less frequently wandering doors travel across the screen If Alice fails to jump over a door she's whisked back to the start of her walk Gasp!

Come off it APS Try and pull the wool over someone else's eyes Malice in Videoland is a video nasty avoid it at all costs but let the Mad Hatter and his friends have the last say

'This piece of rudeness was more than Alice could bear she got up in great disgust, and walked off the Dormouse fell asleep instantly and neither of the others took the least notice

F D

Touchline
Name *Alice in Videoland* ***Supplier*** *Bug Byte Vector House Leicester Place London WC2H 7NB* ***Tel*** *01 4[illegible] 0666* ***Machine*** *C64* ***Price*** *£2 99*
Originality *0/10* ***Playability*** *1/10* ***Graphics*** *3/10* ***Value*** *1/10*

EDDIE KIDD'S JUMP CHALLENGE

My best advice is not to buy it This game refuses to lie down and die sorry it refuses to lie down it died a long time ago

The mature principle of this game is to ride a motorbike up a ramp and jump over a row of cars I always understood the principle of acceleration to be one of steadily increasing momentum Obviously I was mislead by my physics teacher as according to this game acceleration is one of steadily

increasing noise. As Eddie 'speeds up' the background passes by at the same constant rate and goes on and on and on.

An age later you meet the ramp, take off and fight to control the altitude of the bike to make a safe landing. If you fail, Eddie limps off the screen and you're back at the start of your run up.

If Eddie Kidd is a modern day Rocker, then Ricochet seems to have gone off theirs with this escapee (surely it's not a release!). Martech must be laughing all the way to the bank after off-loading this pile of tripe onto Mastertronic.

E D

Touchline
Name. *Eddie Kidd's Jump Challenge* ***Suppliers.*** *Ricochet 8-10 Paul Street London EC2A 4JH* ***Tel*** *01 377 6880* ***Machine*** *C64* ***Price*** *£2.99*
Originality *1/10* ***Playability*** *0/10* ***Graphics*** *1/10* ***Value*** *1/10*

ARCADE CLASSICS

They say that nostalgia isn't what it used to be. Was it really that long ago that we gasped with amazement at delights such as Space Invaders and Asteroids?

For any of you who have forgotten what computer games used to look like, Firebird have assembled four different classic titles in one game.

Space Invaders is the daddy of all shoot-em-ups. Left, right and fire are the basic controls as you dodge from under the barricades to wipe out row after row of aliens as they pursue their ever-relentless path down the screen towards you.

Big fleas have little fleas upon their backs to bite 'em, little fleas have litter fleas and so *ad infinitum* – the basic principle of Asteroids. You are trapped in a giant storm of these huge space boulders and as you shoot at the rocks they break up into medium sized rocks which in turn become smaller rocks. Contact with any of them, not surprisingly, is lethal.

The other two games are somewhat disappointingly two player games. Surely there were enough one player games around or failing that, computer opponents possible. Snakes is an attempt to make your opponent crash into you or move back on himself before he does likewise to you, and Space War is a variation on the same theme except that you must also avoid the sun's gravitational pull.

Four games for two quid seems to be great value for money, but the games are extremely crude by today's standards even if they are fair copies of the originals. Unless you are desperate for one of these oldies to complete your collection, stay well away.

G R H

Touchline

Title *Arcade Classics* ***Supplier*** *Firebird Silver, First Floor, 64-67 New Oxford Street London WC1A 1PS* ***Tel*** *01 379 6755* ***Machine*** *C64* ***Price*** *£1.99*
Originality *1/10* ***Graphics*** *2/10* ***Playability*** *6/10* ***Value*** *3/10*

COIN-OP CLASSICS

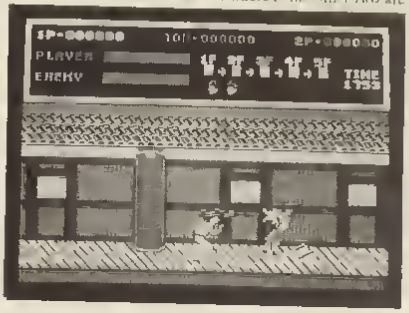
In this age of compilations US Gold have bundled three of their coin-op conversions together for the price of one game.

Kung-Fu Master is, as you might suspect, a martial arts beat-em-up. As usual there is a princess who has got herself captured, and it is up to you to organise a rescue. Various henchmen block your way together with fire breathing dragons, killer bees, psychopathic dwarves and exploding vases. If you make your way to the end of a level, a final confrontation with a guardian is all that stops your progress. This is a reasonable game of its type, despite some blocky graphics.

Breakthru sees you trying to penetrate 400 miles behind enemy lines in order to rescue one of your country's top secret agents. You are armed only with a jeep but it does have the advantage that it can fly and jump short distances. There are five different terrains for you to cross should you accept the mission.

Crystal Castles is, despite the hype accompanying it, no more than a glorified Pacman derivative. Bentley Bear must collect gems while avoiding the various nasties. There are tunnels and lifts which can aid or hinder you.

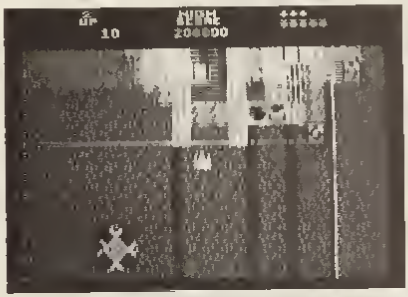
Although compilations appear to be good value for money, you have to watch what you are getting. Here only one game is average (Kung Fu) while is the other two are



downright awful If you were keen on the arcade originals, then you might consider buying this but otherwise I suggest you give it a wide berth

G R H

Touchline
Title *Coin-op Classics* ***Supplier*** *US Gold Ltd Unit 2/3 Holford Way Holford Birmingham B6 7AX* ***Tel*** *021-356 3388* ***Machine*** *C64* ***Price*** *£9 99*
Originality *3/10* ***Playability*** *4/10* ***Graphics*** *4/10* ***Value*** *3/10*



THE LAST MISSION

Z*zzzzzzzzzz zz,zzz*, yawn, oh hello sorry about that I've just been playing The Last Mission the latest conversion from US Gold

The story has it that you are an outcast driven from your home galaxy – why I don't know Anyway it goes on to say that you must return to your home, blow up the aliens that are trying to take over your homestead If you do this you will no longer have to live in exile you would be a hero So how can you refuse – you jump into your super-star fighter and zoom off to your home planet

On arrival you discover that you have zoomed into a really poor arcade conversion Your home looks like it's made out of lego bricks and the space ships are bland and small, but the music that your on-board computer is playing is quite good

Scattered around the planets are various silos which when shot release a powerful weapon of some kind – simply fly over these to pick them up then it will be fitted to your ship

I cannot recommend this at £9 99, it just isn't up to scratch It could be different if it was a budget game but as it stands I would leave well alone

K K

Touchline
Title *The Last Mission* ***Supplier*** *US Gold, Units 2 3 Holford Way Holford Birmingham B6 4AX* ***Tel*** *021-356 3388* ***Machine*** *C64* ***Price*** *£9 99 (Cs)/£14 99 (Disk)*
Originality *5/10* ***Playability*** *4/10* ***Graphics*** *5/10* ***Value*** *3/10*

SWAMP FEVER

David Bellamy may get into some scrapes but never as bad as this Professor Oddbod has taken on the mission to recover as many rare Aisuru flowers as possible from the irradiated swamps of Florida

The radiation has mutated the swampland creatures into man-eating monsters with a penchant for professors Armed only with a flamethrower the professor has to fight his way through 35 swampy screens picking flowers as he goes

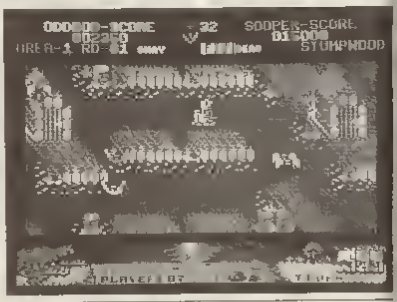
Every now and again the swamp fever infected creatures swarm around the professor and he has to flee onto a neighbouring swamp to free himself of the threat

The scenario seems quite respectable but the game itself is awful What programming there is has been proficiently executed but each swamp maze falls into one of two types each variation round these limited themes differing only in graphics design The two basic maps of the maze do not seem to vary at all

Players have basically ended up with a two screen game with very limited action Even at budget price this is an extremely disappointing product

E D

Touchline
Name *Swamp Fever* ***Supplier*** *Players* ***Tel*** *07356 71500* ***Machine*** *C64* ***Price*** *£1 99*
Originality *1/10* ***Playability*** *3/10* ***Graphics*** *3/10* ***Value*** *2/10*



PIR SQUARED

Well I expected another [illegible] that was nothing to write home about but I was pleasantly surprised with this recent release from Argus Press The first thing that struck me about the game was the colourful and well-drawn loading screen, but I still remained sceptical As the game loaded rather a nice tune played and grinning curious I started the game I found it to be a highly playable addictive arcade game that was also quite frustrating

You play Professor Brain Storm who is just about to appear on TV to give a lecture on geometric solids So there you are feeling pretty confident when suddenly your mu

begins to wander. What lousy timing – the credits are beginning to roll and the intro music playing and your standing there daydreaming. 'Oh no, it's happening again' it must be nerves as now your old Prof can hardly remember his own name let alone a formula. However hard he tries to think he can't get back to normal. All hope is not yet lost however as there's now a chance for Prof to reconstruct his memory and hopefully recover the formulas.

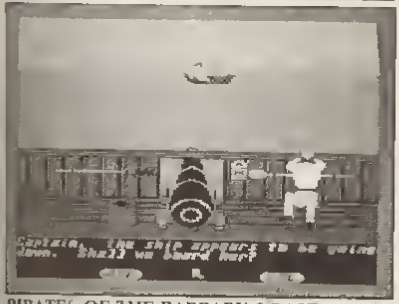
That's where you come in – move around the cogs and wheels of the Prof's brain, recovering the lost formulas and collecting various other useful items such as calculators which increase your speed. As well as useful aids, there are also objects which hinder you (stray thoughts) like ice cream and naked women (you fibber ED).

So there you have it, a pretty enjoyable game from Argus Press Software but I feel the asking price is a little too expensive at just under a tenner. If you are rich go and buy it if not have a look at it if you can.

K R

Touchline

Title *PIR Squared* ***Supplier*** *Argus Press Software Victory House Leicester Place London WC2H 7NB* ***Tel*** *01 439 0666* ***Price*** *£8.99 (Cs) £12.99 (Disk)* ***Machine*** *C64*
Graphics *6/10* ***Originality*** *8/10* ***Playability*** *7/10* ***Value*** *6/10*



PIRATES OF THE BARBARY COAST

Your daughter has been kidnapped and is being held to ransom by the evil Pirate Bloodthroat. You have thirty days to come up with 50 000 gold pieces or else.

You have two main courses of action available to you. You can try and raise the money by buying and selling goods along the North African coast and you can try and find the secret lair of Bloodthroat and destroy him.

The game is a combination of strategy and action. Starting off in a friendly port you have to hire and fire crew, keep them fed and juggle the supplies within your hold, haggling with merchants for the best prices. If your ship is damaged you can take the opportunity to get it repaired for payment of the appropriate amount of gold. Choose your destination and set sail.

Once at sea, you have to prime your cannon ready for any potential action. This involves selecting which of the fifteen guns are to be loaded and following a set pattern of inserting the powder, tamping it down, putting in the ball, etc. If all goes well the cannon indicators change colour. Get the sequence wrong and you have to start all over again.

When in combat you will need to find the right elevation for your guns with a few test shots before moving along the row of cannon trying to sink the enemy. Of course he is trying to do the same to you and any hits by him will result in your crew falling by their guns. If you succeed in defeating the enemy, you get the chance to plunder for information or gold but not both.

Despite the large colourful graphics the game is slow to play and a little difficult to control despite being icon/menu driven. If you are looking for a strategy game then Pirates from Microprose is infinitely better. If it is action that you want, again there are better games on the market. Pirates of the Barbary Coast seems to fall between two stools.

G.R.H.

Touchline

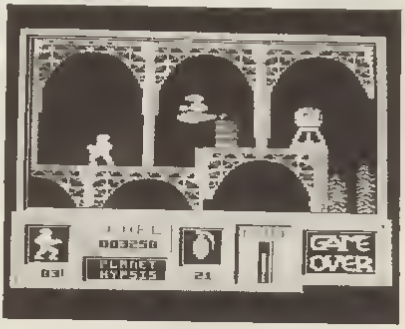
Title *Pirates of the Barbary Coast* ***Supplier*** *Cascade Games Ltd 1-3 Haywra Crescent Harrogate North Yorkshire HG1 5BG* ***Tel*** *0423 525325* ***Machine*** *C64 – disk only* ***Price*** *£14.99*
Originality *7/10* ***Playability*** *4/10* ***Graphics*** *9/10* ***Value*** *5/10*

GAME OVER

What an original title. Game Over – it's clever yet so simple. I bet loads of software houses are kicking themselves saying 'why didn't we think of a title like that?'

But what is the game like? Well I can assure you you will not be disappointed. You play Arkos who lives far away in a distant galaxy and is a faithful servant to the Beautiful but totally evil Gremla. Arkos is a ruthless cyborg-type being who used to follow Gremla's every command, but as her power grew so did her greed and now Arkos can take no more.

He rounds the rebel forces in a plot to overthrow her and



to destroy her palace for good

When the attack was agreed, Arkos decided it would be best if he went alone after all. he knew the route to the palace and could fight better than any mortal The other rebels agreed and Arkos set forward to rid the planet of the evil Gremla Kill everything that gets in your way and anything that doesn't!

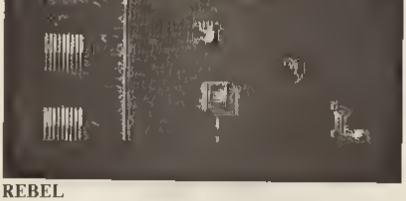
The game comes in two parts, the first being the planet Hypsis This is the easy part as you only need to reach the 11th screen to confront and kill the mighty Orko who was once your friend and is now your worst enemy, and must be shot many times before he dies Progress will not be granted until he is dead

To aid you on your quest you will find red barrels, which must be shot three times to unleash their contents Some contain various weapons and power hearts but there is a chance that a mine lies inside so you have to watch your step as the mines are very deadly They can only be passed by wearing a field of force (also found in the barrels) or jumped but this may be impossible in some situations

The backdrops and aliens are very nicely drawn and this makes the game a lot more playable however you may soon find yourself cursing this game as it can sometimes prove very hard and especially frustrating That said it is still a nicely presented game that plays reasonably well with some nice sound and spot effects thrown in However, it could have been improved with in-game music and better control of the main character but you can't have everything can you?

K R

Touchline
Title *Game Over* ***Supplier*** *Imagine 6 Central Street Manchester M2 5NS* ***Tel*** *061-832 6633* ***Price*** *£8 99*
Originality *6/10* ***Playability*** *7/10* ***Graphics*** *8/10* ***Value*** *6/10*



REBEL

This new game from Virgin has a really good story line, try and imagine this You are forced to work for a plantation centre where the shifts are long and hard and no one knows what the word cry means and when you reach just over thirty you are terminated – not very nice huh?

The new plantation supervisor has decided to try and improve production which he does by creating a workforce of zombies Sleep is controlled by him and you sleep in a special chamber which makes you sleep and wake up in the morning There are countless pills to be taken but these do nothing much just slow your brain down – they are known as the Tenq-u-pills and they slowly take away your resistance Our hero has managed to stop taking these pills and now realises the danger

This is where you step in, you have to guide a tank containing our hero, around the giant base switching the solar panels so they will direct the power beam into a selected wall on each level When you are satisfied with this, fire the lazer beam and hope you got it right If you do you'll go onto the next level, if not you'll lose a life

As you advance through the levels the backdrops change but that's about it, you will get the same aliens same task and so after a while you may find yourself getting bored This is a shame as the game has some wonderful graphics, but stumbles on the gameplay side If this had been a fiver or less it would have been good but at just under a tenner it's not really very good value

K R

Touchline
Title *Rebel* ***Supplier*** *Virgin 2-4 Vernon Road Portobello Road London W11 2DX* ***Telephone*** *01-727 8070*
Originality *4/10* ***Playability*** *6/10* ***Graphics*** *7/10* ***Value*** *4/10*

NICK FALDO

Here's your chance to hack your way through the rough and bunkers of the Royal St Georges course in Sandwich

An icon drive golf game you must select your club (and suffer the sarcastic comments of your caddy should your choice differ from his own notso humble opinion) direction and strength of the shot Your player lines up the shot automatically and wacks the ball according to your predetermined instructions

The upper portion of the screen gives a top down view of the hole and if like me, your shots are nowhere near the fairway you can call up a map of the surrounding area to show where you are in relation to the green

All is well until you actually land on the green and your ball is lying a couple of feet from the hole Distinguishing between the hole and ball becomes next to impossible and I have actually putted six from a short distance

This would have been a reasonable if somewhat simplistic simulation but for the putting fiasco If you want a really good golf game then save your money and buy World Class Leaderboard instead

G.R H

Touchline
Title *Nick Foldo Plays The Open* ***Supplier*** *Bug-Byte Victoria House Leicester Place London WC2H 7NB* ***Tel*** *01-439 0666* ***Machine*** *C64* ***Price*** *£2 99*
Originality *3/10* ***Playability*** *3/10* ***Graphics*** *4/10* ***Value*** *3/10*

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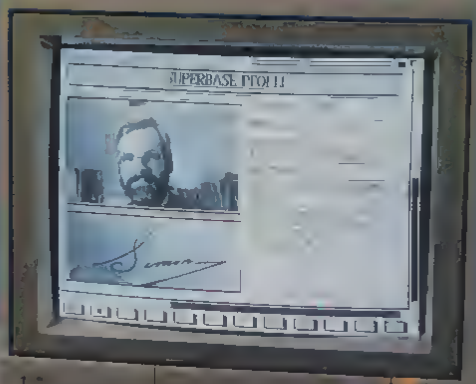
AMIGA

SUPERBASE PROFESSIONAL, THE ULTIMATE DATABASE?



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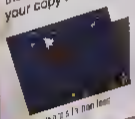

The warp begins as you dive deep into

The warp begins as you dive as spacecraft is shot down

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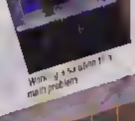
Cont n r space ship Discovery



Wh n d s solved t s math problem

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Amiga News

Find out what's been happening in the Amiga world

1.28Mb [illegible] hard disk unit

Hard News

A new series of Amiga compatible hard disk systems have been launched in the USA by the Supra Corporation. The high performance systems incorporate a hard disk drive in one of four capacities. SCSI expansion port and provide RAM expansion capabilities.

The four drives have 20, 30, 60 and 250 Mbyte capacities and retail in the States at $995, $1195, $1995 and $3995 respectively.

The SupraDrives plug directly into the Amiga 500 expansion socket and feature Supra's own high speed data transfer interface. Burst date transfer speeds of 250Kbytes per second can be achieved to complement the fast seeking hard drives.

RAM boards of 1 or 2Mbyte capacity can be plugged into the hard disk units and the separate power supply of the units is used to power the expansion boards to avoid overloading the Amiga.

New Lasers

Two new laser printers are ready for launch from Brother and Star Micronics.

The Brother HL-8 has a printout speed of eight pages per minute. Access to five resident fonts may be supplemented through two front cartridge slots making it suitable for desktop publishing applications.

The speed of the Brother machine is matched by Star's LaserPrinter 8. There are eight fonts resident in the machine cartridge expansion capability and user definable characters can be specified at the cost of a small part of the internal 1Mbyte memory. LaserPrinter 8 can operate in both landscape and portrait formats and up to 64 different fonts can be included on a single tape.

Despite all of these facilities the price has been kept to a relatively low £2,195 including a year's on-site parts and labour warranty.

Touchline

***Brother Computer Peripherals Division** Jones+Brother, Shepley Street, Guide Bridge, Audenshaw, Manchester M34 5ID. **Tel** 061-330 6531*

***Star Micronics UK** Craven House, 40 Uxbridge Road, Ealing, London W5 2BS. **Tel** 01-840 1800*

CRL's Amiga Range

CRL have announced their plans to release three new games for the Amiga: Blackshadow, Tau Ceti and Academy.

In Blackshadow you command a spacecraft which flies over a vast heavily armed asteroid. After running the gauntlet of defence systems knocking out as many of the weapons as possible the final target on each level has to be destroyed.

Tau Ceti and Academy have already been seen on the C64 but the Amiga versions promise extra excitement and realism.

Tau Ceti takes place on a decimated planet and your mission is to close down the malfunctioning systems which have defied all attempts to previous adventurers. In realistic 3D vector graphics, you must search the cities in your skimmer craft and collect the rods which are needed to shut down the massive fission reactor which fuels the planet.

Academy is the follow up to Tau Ceti which allows you to design your own skimmer. After graduating from the Academy you are able to tackle one of 20 missions but success will rely on the design of your skimmer.

All three CRL games have a retail price of £19.95.

Touchline

***CRL** CRL House, 9 Kings Yard, Carpenters Road, London E15 2HD. **Tel** 01-533 2918*

Continued on page 37

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ALL PRICES CORRECT AT TIME OF GOING TO PRESS

Ron and Jean Baker receive their prize from John Speller MD of MicroPro International

Wonderful WordStar

Celebrations were called for when MicroPro passed the three million sales figure for their WordStar package The crucial landmark was due to be released in late 1987 so a special promotion was embarked upon with the promise of a fantastic Far Eastern holiday for the lucky purchaser of the three millionth copy of the wordprocessor

The actual purchaser of the momentous package could not be accurately assessed so anyone buying their copy of WordStar during September and October became eligible for the Celebration Draw made at London's Hurlingham Club on November 27th

The lucky recipient of the first prize was Ron Baker of Romford Ron works for British Telecom International as an implementation and design engineer and it was in this capacity that he registered the software on BTI s behalf The prize is a holiday for two which he will share with his wife Jean

The second prize a compact disk player, was won by Allan Green from the Department of Physics at Queen Elizabeth s Hospital Edgbaston An Olympus Trip camera formed the third prize awarded to Julian Wates Senior Lecturer in charge of Computing at North Hertfordshire College

The three million sales figure in less than a decade by MicroPro is stunning when seen on a daily sales basis To reach this volume of sales almost 1000 WordStar units will have been shipped out every day! Perhaps we ll see the four millionth sales in May or June 1990

Touchline

MicroPro International *Hogarth House 28/31 High Street Wimbledon Village London SW19 5BY Tel 01 879 1122*

Invisible Arts Package

The Amiga notched up another TV success before the end of 1987 when Channel 4 s Eleventh Hour series presented Gorilla Tape Productions' programme Invisible TV featuring effects generated on an Amiga running Electronic Art s DeluxePaint II

IVT a fictitious TV station was used as a vehicle to expose the 'propoganda' which veils itself in the guise of popular entertainment The message was spread by using examples of a typical day s broadcasting in which different types of programmes were all given the hip hop scratch treatment

Special effects were created by computer graphic artist Gary Whiteley who has used the Amiga in several previous productions as a suitable alternative to graphics production equipment costing many times that of the computer DeluxePaint II provided a suitable environment for the production of the extraordinary effects which Whiteley visualised

Touchline

Electronic Arts *Langley Business Centre 11 49 Station Road Langley Berkshire SL3 8YN Tel 0753 49442*

ProWrite Update

A new version of ProWrite V2 0 – is available which has many added features Of special interest is the self selection default specifications All start up parameters such as font justification spacing and colours can be predetermined and several preference files can be stored and loaded whenever required

Graphics and text dumps have been greatly improved giving speeds which may reach ten times that of previous versions In text mode the program will run as fast as the printer will allow High resolution printers can be fed with a smoothed output which permits true letter quality printouts from any of the Amiga fonts

Printouts can be set to any width through ProWrite 2 0 using the sideways printing capability for extra wide paper

HAM pictures such as those created with DigiPaint can be loaded into ProWrite and resized

Paragraph formatting options have been incorporated to allow one and a half spacing fixed line height and the inclusion of a blank separating line between each paragraph The finished paragraphs can be sorted into ascending or descending order to assist in creating a table or for editing the custom user dictionary which complements the fixed 95,000 word spelling checker

Character word sentence paragraph picture and page counts can be easily accessed for full document information readouts

These are just the main improvements many more alterations and fine tunings have been incorporated to increase the power of this vastly improved product from New Horizons Software

Touchline

New Horizons Software *P O Box 43167 Austin Texas 78745 Tel 010 512 328 6650*

Amiga Gossip

The recent news about virus disks has set the Amiga world jittering with fear one software producer told me that nearly 40% of his disks were "infectd" with a virus that occasionally popped up with the message "YOUR MACHINE HAS BEEN INFECTED"

In America – where the virus is believed to have first started – there are no less than three major disk infestations – all of which recognise the other viruses got in the way of his custom disk protection system his fear as that unless you switch the Amiga off between every disk swap, the chances are quite high that a similarly protected disk will get fiddled around with thus rendering it useless

Amiga Wars

In a meeting, George Lucas was reportedly asked if he had considered supporting the Amiga for some of the new mega-games doing the rounds, apparently he came up with the cracker 'Rounded down to the nearest million, there are no Amigas in the world!"

C64 Emulation – again

I have just found out that a third C64 emulator is nearly finished, it will be shown around the major hardware companies soon Called "Card128!" this item is aimed fairly and squarely at Amiga 500 owners who have no memory expansion whatsoever – it plugs under the machine (where an additional memory card is normally fitted)

Sporting a Z80 and a 6512 CPU, this machine emulates a C64 and a C128 with "as near as dammit" software compatibility There is a port for the 1512 disk drive the drive controller software is reportedly inside the Amiga

Naturally this is pure gossip but rumour has it that Card128! works like MS-DOS on the Amiga 2000 i e it has a window on the workbench that can act as a task under intuition! If this is the case, then transferring files from one machine to another should be a cinch

Take your Pick

There were a few red faces at COMDEX recently as rumours were flying around that the XENIX operating system had been developed as an alternative operating system to AmigaDOS in case the Amiga s own one proved to be bug ridden! Mind you, I also heard that TRIPOS developed in the UK by the same team that did Sinclair's QL) was on the cards as well!

The last I heard of the XENIX rumour was when I heard a CBM man at the bar saying – "well if we have developed it then it wouldn t work anyway, but if we haven't then we sure as hell will soon!"

Latest news is that the A2024 colour monitor is on show in America released to coincide with COMDEX this little beastie has 1000 x 800 resolution All of the pictures were pin sharp and there s no interlace resolution, CBM were pretty cagey about the price, and as for the case – YUK! I have seen better crafted monitors at the Atari stand – sorry guys, but it's an ugly S O B!

CBM Digitiser?

A new video digitiser called "NYIT Live!" was quietly being shown by a dealer (with a CBM badge!) I gather the plan is to get the Amiga audience "primed" by using products from Mimetics and Newtek as soon as everybody is familiar with digitizing hardware and software, CBM will jump in with a licenced NTIY 'Live!' card and clean up on the professional market Only a pre-production model was on show, but it looks promising as it runs at 30 frames a second with 7 bits for each RGB colour, as opposed to the 3 or 4 you get with 'ALIVE!'

Before you start thinking of replacing your 68000 inside the Amiga with a 68010 I got a call last week from a guy in Utah bitching about the fact tht none of the Psygnosis game will work with it fitted – I haven't been able to get any response from Psygnosis on this one yet but then it s your fault for changing the Amiga s CPU isn't it?

This is a great little rumour Did you know that the developers of the Amiga fought tooth and nail to have PC slots in the A2000 – yet the American reviewers slated it for this omission – isn't life tragic!

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Amiga On Line

Who? Anyone with an Amiga 500 1000 or 2000 Kickstart 1 2 only
When? From now on
How? By dialling this number for information 01 997 2591

Compunet will tell you how to get onto a special bulletin board from which you can download the terminal software This gets you onto *Compunet* for a look around At this stage you can register your first subscription online

How Much?

The subscription costs £19 99 Most regular users then pay for an 'off peak' rate on top which works out at about £18 per quarter Otherwise London area users can get onto *Compunet* at 60p per hour. Outside London, with access via the ISTEL network, it costs £4 per hour

Compunet already has a lively Amiga section formed by C64 upgraders with advice, criticism and debate among other things, on shareware and public domain software Nor are other computers excluded Atari ST and PC owners will soon join and swell the ranks There is even a lively Amiga versus Archimedes battle being waged as I write

Window Magic

The terminal software, written by *Ariadne Software* – of 'Kickstart Guide' fame – is brilliant and fascinating to use It operates in the full multitasking environment with separate on-screen windows and pull down menus This means that the Workbench, indeed any software, is available for use while Compunet is online The prospect is in sight of downloading large files – as programs naturally expand to fill the available memory – in the background while you carry on doing something else!

Within the terminal this feature is used to maintain a directory display in one window while accessing pages of text or running demos in another, the picture window A third window, the editor, can be opened The editor can be used offline the contents remaining intact in the editor while you go online to *Compunet* While online, the contents of the picture window can be instantly copied into the editor Any editing done can be accepted for use or rejected, in which case the editor window is restored to its original appearance

But can an Amiga screen cope with a C64 display? Or are you confined to a special Amiga part of *Compunet*? As you might expect, the terminal software takes care of it, simulating the 64 character set for text based material It is also possible to save 64 software to disk if you so wish *Compunet* is a simple way of porting the data between machines You might wish to convert a 64 BASIC program into Amiga Microsoft BASIC for instance or, less likely vice versa Amiga high resolution graphics will also be possible, the date being downloaded for display by the computer

The items already on the menus when I viewed the development version of the software were LOGON SETUP DROP and QUIT and MAIL CAT, EXECUTE EXTEND VOTE (a vital bit of people power on *Compunet*) ACCOUNT, and LEAVE Instead of scrolling through and highlighting commands the Amiga user clicks with the mouse pointer on gadgets The directory entries can be clicked on to move to a lower level of the directory tree or to activate a demo or set of text pages

All the features familiar from the C64 are available to the Amiga user including electronic mail

New Features

I mentioned the problem of the sheer size of Amiga programs *Compunet*

Amiga owners now have the opportunity to tap into the wealth of demos, utilities, debates and user feedback which is Compunet

By A. Owen

currently operates at the standard 1200/75 on the Infotrax network. 1200 is acceptable from *Compunet* to the user but say you want to send something to *Compunet* 75 baus is unrealistic. *Compunet* itself will undoubtedly support 1200/1200 one day when the majority of users have the appropriate modem but in the meantime a separate 1200/1200 line will be made available for the London area. Amiga subscribers will also be able to send their disks to *Compunet* for them to upload onto the system. Compunet will be offering a modem deal to potential subscribers which will offer at the least an upgrade path to 1200/1200.

The terminal is currently 80 column but a 40 column version will probably be developed for those using an Amiga 500 in conjunction with a television. Of course the advantage of being on *Compunet* is that you can update your terminal software from the database when new features are added. software support business is pay £100s for

Conclusions

Compunet itself is a very promising resource for the Amiga user. It is likely that the demo and software base will quickly benefit from upgraders, coders and importers of American material. There are already many demos available on disc. If the C64 material is anything to go by – there are well over 1,000 demos, previews, games, music, utilities and art – Amiga owners will have plenty to keep them busy. The editorial policy is to let authors put their own material onto *Compunet*, to monitor its success with other users and, as editor Jane Firbank puts it, to 'immortalise the good stuff'. Until something even better comes along.

The terminal software is of a very high standard with all the usual features such as resizeable windows, requestors – for a number to dial for instance – and pull downs. I was most impressed with the operation of the multitasking. Ariadne have fulfilled an ambitious design.

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Help at Hand

Pop-up Utilities to make life easier

By Anne Owen

Complicated as it is the Amiga was bound to spawn utilities to harness the power without the pain I set out to test a few of the latest

Zing! Keys

This is not just an add on for owners of Zing!, a menu/control panel for AmigaDOS by Meridian Software Zing! Keys certainly works very well with Zing! but the provision of macro keys for any application, from DOS to Deluxe Paint 2 is potentially very useful for any Amiga user

Macros are of course available within some software packages, e.g WordPerfect Most however contain no such facility A macro is a series of key presses or commands held together in a form which can be called up by a single key press For instance, while using the Scribble! wordprocessor you can press a previously defined macro key to insert a series of dot' commands to format your document Zing! Keys has a number of very useful built-in macros but any number can be defined by the user and assigned to Hot Keys The Hot Keys is the key combination which calls up the macro function

An amazing feature of Zing! keys is that you can record events as well as strings of text or key presses There are a number of already defined Intuition macros which size and move windows with single key presses Mouse movements and clicks can also be programmed into macros

Macros can be edited saved loaded and merged The definitions can be nested delays inserted and variables introduced e.g prompting for a filename from the user a string which is then entered into a command line

Further use of this ability to 'record' is made with the HISTORY command CLI commands are recorded and can be retrieved into a gadget window for editing and reuse A more unusual use is the SECURITY LOCK command which locks the keyboard until a password is entered – handy if you have to leave your desk and don't want anyone to tamper with your work.

There's more to Zing! Keys than first meets the eye For anyone who likes to write their own batch files to configure their system then the programming element will be an enjoyable challenge Zing! Keys can be used to customise an application for the novice user so that he just has to 'press buttons' or to setup an 'individual' environment Separate hot key and macro definitions can be saved on any disk, ready for installation

Meridian's manual is excellent and doesn't hesitate to repeat itself if necessary There are some nice tutorial style sections

Grabbit

This is a simple but useful utility If dumping screens to your printer is important then Grabbit does a good clean job without crashing other software Brilliantly presented on screen with good clear messages and help windows Grabbit is polished software but is limited to the eponymous print screen function and 'Anytime' a colour palette utility The utilities are installed by clicking on the Workbench icons and, once in place are available by pressing a simple key combination

Grabbit accesses the Preferences settings and sends the current screen to the printer Anytime provides familiar slider controls which effect the colour combinations shown on screen Knowing how much people like to individualise their colour schemes, I think this will prove a popular feature

Gizmoz

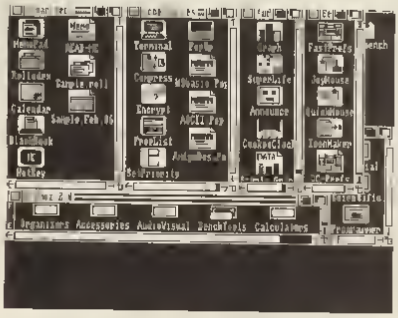
Gizmoz is a different animal The single disk contains a vast array of programs and utilities some more useful than others

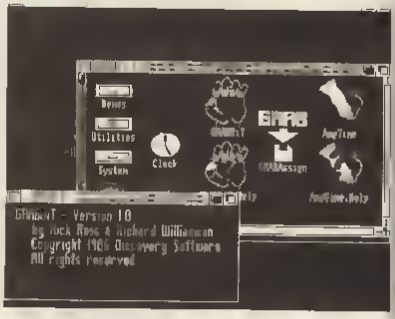
The first thing you do with Gizmoz is open up all the windows to see what you've got clicking on icons indescriminately to see what's 'underneath' Some fun things pop up like the cuckoo clock – sure to replace the boring Workbench clock – but there are alot more rather static and uninteresting windows

Not impressed? Well quickly get into the excellent manual and you'll begin to realise that here you have a very workmanlike, even sophisticated set of productivity tools The key to the success of this variety of utilities/applications is the way they mesh with the Workbench their way of working is instantly familiar The sophistication of Memopad (text) calendar (dates/times) and Rolodex (card index) is internal to each application and shared by each That is text on screen can be cut out of one and pasted into another a very handy integration of data which saves a lot of time Printing from all three is dealt with by the Black Book tool which sets up output of schedules cards and labels

The calendar can remind you of appointments and the Rolodex can dial a number from a telephone field via a Hayes compatible modem A bar, column or pie graph can be generated from a script written in Memopad and pasted in Gizmoz Graph The resulting picture can be saved as IFF for incorporation into another graphics program Colours can be chosen and pie segments exploded

If you are a scientist there's a





calculator which will work with exponential notation, give you TAN, SIN, COS square, square root and muchmore besides. If calculating annuity or compound interest is part of your job, there's a financial calculator – great for keeping track of that volatile share portfolio! And if you're a programmer your calculator will work in binary, octal, decimal and hex – it will shift and rotate on 4, 8, 16, and 32 bit words and perform logical operations. Copy this one straight to your utilities disk. I opened it up while working on a program in another window.

Gizmoz also contains an array of utilities. FastPrefs lets you save Preference configurations which can be activated by clicking their icon. A library of configurations is very useful if, like me, you keep swapping printers. Joymouse sets up port two so that you can use a joystick like a mouse. Quickmouse adds an acceleration function to the mouse control software. Announce is an improvement over the Workbench speech demo. It translates English into phonemes too – handy if you're programming with TRANSLATE$. Running from CLI, Announce becomes a useful command to take announcements from batchfiles.

Icon Maker turns making an icon into the simple matter of loading an IFF file (created, say, in Dpaint), sizing it and matching the Workbench colours. Next you choose the icon type, device, disk, drawer, etc and its highlight (when you click on an icon it can be highlighted in three ways – complement, backfill or a new image entirely). Other status information is easily specified and the icon saved for use.

The Gizmoz Terminal will get you safely into the text based bulletin board or service such as Telecom Gold. For file transfer there is Xmodem Simple (Xmodem but with the original file length) and Amiga binary. There are six terminal emulations and full control over baud rates, parity and so on.

The Gizmoz Hotkey allow the user to define up to eight hot keys (key press combinations e.g. CTRL-ALT-Z) and to assign a keyboard press (including HELP, TAB and RETURN) to the key. This definition is known as a macro.

You may find Gizmoz Popup very useful if you are new to the computer. It 'pops up' a card on the screen. Two cards describing Amiga DOS and Microsoft BASIC are available, but you can prepare your own cards with MemoPad. There's a string search facility too.

Two, perhaps limited interest utilities are compress and encrypt. Compress can be genuinely useful for file transfer – as long as the destination has decompress available. Also in an office environment encrypt may be a useful disincentive to anyone wanting to peek at your files!

Finally, there's a game of Life, well-known and to be treated as a freebie on Gizmoz.

All I can say is 'how did they get it all on one disk?' Some of the utilities are available in different form in the public domain but you can judge their value for your own purposes. After 1 month's use, I'd now rate the Gizmoz productivity tools as essential items for the office, or home office unless you have already invested in full versions of wordprocessor, database and spreadsheet.

Helpmates

It is interesting to note how little overlap there is between the many utilities available for the Amiga. Those reviewed in this article are second string productivity tools. Gizmoz is highly recommended for those who don't like to leave Workbench. Grabbit too is easy to use and does its (limited) job in an uncomplicated manner. Meridian's Zing! and Metacomco's Shell reviewed in former *Your Amigas* are more fundamental tools. Shell extends AmigaDOS and is my preference. Zing! puts an alternative and very powerful front end onto AmigaDOS as well as providing screen saves and dumps. There is now an improved manual and Zing! keys dovetails nicely with the earlier product.

Touchline

***Name** Zing! Keys **Price** £25.00 **Machine** Amiga **Supplier** Meridian Software **Tel** (713) 488 2144 (USA)*
***Originality** 8/10 **Useability** 8/10 **Documentation** 8/10 **Value** 8/10*

***Name** Grabbit **Price** £21.99 **Machine** Amiga **Supplier** Datel Electronics Unit 8/9 Dewsbury Road Fenton Industrial Estate Stoke-on-Trent **Tel** 0782 273815*
***Originality** 6/10 **Useability** 8/10 **Documentation** 8/10 **Value** 7/10*

***Name** Gizmoz **Price** £49.95 **Machine** Amiga **Supplier** Robtek Ltd **Tel** 01 847 4457*
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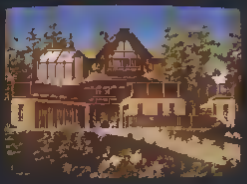

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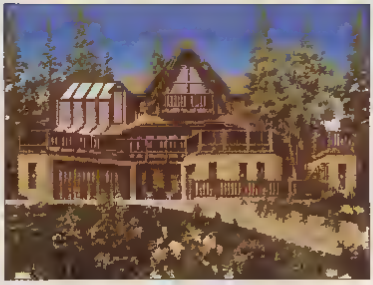

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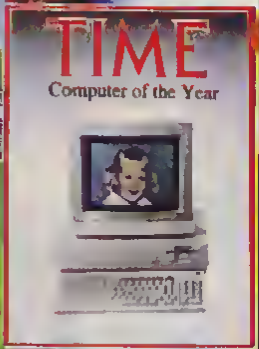

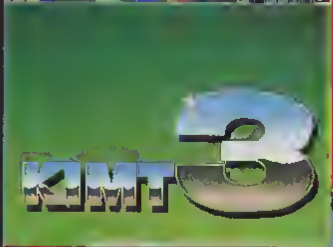

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Amiga Games

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Test Drive

Have you ever wanted to drive a Porsche 911 turbo or a Ferrari Testarossa or perhaps just have a quick spin in a little black Lotus Esprit? Well, I have wanted to drive one very fast for ever now, with the knowledge that I could outrun any police car in the vicinity or at least be forewarned in advance by a small radar device (now popular in the States).

Imagine what it's like – in your hand is a disk asking you to test drive one of the five most expensive and luxurious cars there are! Quite a challenge eh?

Test Drive is Accolade's latest offering since Hardball. Like Hardball these guys really know how to design a game: high screen digitized speech, snappy music – hey if the intro sequence is anything to go by then the game looks set to be a stunner.

And what a stunner it is! You make a quick selection from the list of five cars (Porsche 911 Turbo, Ferrari Testarossa, Lamborghini Countach, Lotus Turbo Esprit and the Chevvy Corvette) each machine has its vital statistics on display, you select the one you most like (!) and away you go.

The basic idea of the game is to drive fast – very fast. Of course the police try to stop you – after all racing along at 170mph in a 55mph zone is not their idea of sanity. Initially the game is very simple: just don't go too heavy on the revs counter, just take your machine (mine's the Porsche!) up to 800 revs and drop the clutch, as the back tyres squeal, drop into second, and so on, until you start to feel yourself lose control of the car and then you slow down.

At higher levels of the game there are other cars driving in both directions, there are more police, a really sneaky hairpin bend, pits in the road and some rough dips and peaks forcing you to slow down a bit – but don't go too slow, you won't deserve to test drive any of these beautiful cars

and the letter GAME OVER will [illegible]

The simulation, for what I know of these marvellous cars, is quite accurate: the Testarossa clearly outperforms the Porsche 911, but the Porsche can be driven harder: the Testarossa has less road handling capability than say the Lotus Esprit, but the Esprit, like the Countache, is a little delicate when it comes to pushing the machine into overdrive.

A great game to load up when you don't feel like saving the universe, and a really great game if you happen to like fast cars. If you can, try this game out and see if you like it as people's taste in cars and car racing games are electric at best.

C.G.

Touchline

Name *Test Drive* ***Supplier*** *Accolade/Electronic Arts Langley Business Centre, 11-49 Station Road, Langley, Nr Slough, Berks SL3 7YN* ***Tel*** *0753 49442* ***Machine*** *Amiga 512K* ***Price*** *£25.95* ***Originality*** *5/10* ***Playability*** *7/10* ***Graphics*** *8/10* ***Value*** *7/10*

Terramex

THIS IS POSSIBLE THE MOST INFUTIATING GAME I HAVE EVER COME ACROSS IN MY LIFE I have asked the [illegible] because I have played [illegible] very little sleep [illegible] and my eyes are [illegible] minute of it.

Terramex [illegible] unimpressive graphics [illegible] to become one of the best games I have played on the Amiga.

You play [illegible] entrusted with the [illegible] Albert Evestrain and [illegible] who predicted that the [illegible] smithereens by [illegible].

The world is [illegible] proclaimed that the world [illegible].

When the [illegible] hunting the [illegible] had been and the [illegible] Henry Kruscha Wilbur Fortescue Smythe Wu Pong Bu [illegible] Camel [illegible] Henry Beam [illegible] and the Pot.

The adventure is which [illegible] the least there [illegible] things to pick up [illegible] to solve. There [illegible] and [illegible] Prol such as rock snake [illegible] rain - one touch from any of these and you [illegible].

The adventure is massive with something new on just about every screen. The rope bridge for instance had me thinking for ages until I came up with a suitably bizarre way of crossing it.

When you do meet the Prol the game doesn't end there you will have to convince him the world needs saving and surrender many of the things you have found on the way. He is a bit of a cranky old fellow saying things like 'Make an available' between his death rants.

Terramex is likely to be the best arcade game because parts of the adventure are different when you play different characters. It will keep you interested not only because of the detailed interactive graphics because of the [illegible] music (somehow never becoming repetitive [illegible] first!) but because the character [illegible] readily than in any other game. [illegible] and jump [illegible] a cliff without the right item and he will shake his head [illegible] again and he will [illegible] and jump.

This is a great game [illegible] with the right balance of challenge and [illegible] seen a game like this [illegible] Terramex is addictive and [illegible].

C G

Touchline
Name *Terramex* ***Supplier*** *Quicksilva, 1PS, Victory House, Leicester Place, London WC2H [illegible] NB* ***Tel*** *01 439 0666* ***Machine*** *Amiga* ***Price*** *£19.95*
Originality *10/10* ***Graphics*** *9/10* ***Playability*** *10/10* ***Value*** *9/10*

Grand Start

[illegible] decided [illegible] British [illegible] sound alive! [illegible] around [illegible] Street [illegible] Bell [illegible] Mr [illegible] each hitting the [illegible] characteristics.

Grand Start [illegible] seems as if there [illegible] and if you're unlucky [illegible] the chances [illegible] slim indeed. Most of the [illegible] 24th position [illegible] bicker and [illegible] probably [illegible] biggest [illegible].

C G

Touchline
Name *Grand Start* ***Supplier*** *[illegible] Hill Darlington [illegible] Tel [illegible]* ***Machine*** *Amiga* ***Price*** *£19.95*
Originality *5/10* ***Playability*** *5/10* ***Graphics*** *6/10* ***Value*** *7/10*

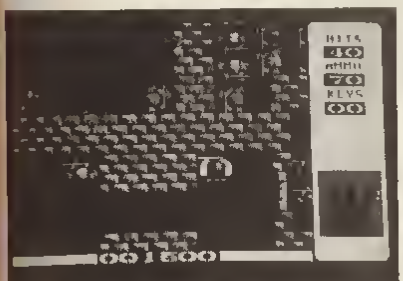
Eagles Nest

The Eagles Nest is a strategically positioned gun emplacement believed to be a central command for an imminent enemy counter-offensive which apparently poses a major threat to the continuation of our advance and must therefore be eliminated before the final offensive can begin.

So the blurb goes on. This is basically a thinly veiled excuse to kill, kill and kill some more.

You play a character who can withstand 50 shots and you can only carry 99 bullets on you but the Eagles Nest has plenty of ammo dotted around the four floors with which to fill your automatic rifle and happily kill a few more Germans, Gooks – or whatever.

Not having seen the C64 or the CPC versions of this game referred to earlier, I must admit I wasn't overly impressed by the programming or the graphics on this one. It is a sort of World War II version of 'Gauntlet' the basic premise being to explore as many rooms as possible, shoot anyone who gets in the way and eat food or take medicine as and when necessary.



The sound effects, although realistic, seem somewhat muted, even turning the Amiga's monitor volume control up full doesn't help matters – a shame as there could be plenty of expected improvements (footsteps, ricochets, other bullets whizzing by and the odd cry as an enemy bites the dust).

To make things easier, there is a supplied map of the ground floor. This is very useful should you want to start learning how to play the game.

You have to be pretty quick to play this game properly. It seems that match your ammo – you could end up being overwhelmed by a cloud of soldiers without any bullets with which to mow them down – or to shoot open a wooden door.

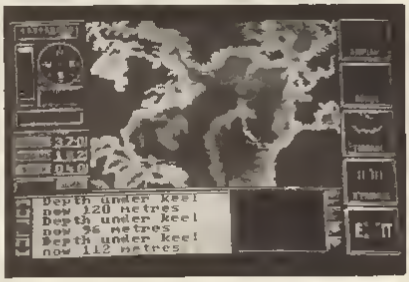
Eagles Nest is most certainly a playable game – a little easy at times, and the puzzles aren't really as demanding as with other games, but until Gauntlet is released for the Amiga it will do.

C-G

Touchline

Name *Eagles Nest* ***Supplier*** *Pandora/Interceptor Micro/Mirrorsoft House, Calleva Park, Aldermaston, Reading, Berks* ***Tel*** *07356 5711* ***Machine*** *Amiga 512k* ***Price*** *£19.95* ***Originality*** *6/10* ***Playability*** *6/10* ***Graphics*** *6/10* ***Value*** *6/10*

The Hunt for Red October



The Red October is a new submarine design so quiet, with a revolutionary new drive system that makes it almost undetectable to the submarine's age old enemy – sonar.

You play one of the most senior Russian Submarine commanders, ordered to test the latest in Soviet death-mongering hardware. But (surprise, surprise) you decide to defect. Your officers are willing to risk their lives to join you while the enlisted crew members suspect nothing.

After killing the KGB-assigned political officer on board your ship (the one man who could blow your cover), you set off under completely false orders to reach the West. Starting at Kashjakes Ridge, you have to slip out undetected by creeping very slowly among the rock formations.

Thus starts the latest in simulations and 'strategic' games programmed by Oxford Digital Enterprises, and with the Amiga they really have had a ball game using full colour graphics (a lot of which is digitised), some sparse but effective sound effects, and mouse control throughout.

Red October isn't a particularly action packed game. Being a more sedate version of 'cat and mouse', you have to avoid detection by all sides until you reach a safe port (all it's either that, or you crash off some country's coastline).

If you are detected by the Americans, they will help you throughout. Russia will, of course, want to blow you out of the water for defecting with their submarine! The English are there also, but their actions are not at clearly defined as the US or USSR ships, although they tend to be a lot faster at manoeuvering.

The game is controlled completely by the mouse, pointing to each respective icon for each member of the crew. The main control panel basically informs you of the ship's direction, the depth and speed of the ship. You can use the compass to change course.

The sonar officer represents the 'eyes and ears' of the submarine, while underwater. This has its disadvantages, such as requiring a visual sighting before taking any action (sonar traces are highly subjective) and using sonar can also leave vulnerable blind spots which can be exploited by hostile attack submarines.

There are plenty of other options – all of which have something to do with the running of Red October. Your job is to plan ahead as far as you can, take defensive action (at first) but strategically plan offensive tactics should you find yourself in a tight spot.

Red October is a good game for thinkers. There is plenty of visual information, and the supplied maps and notes are essential reading. Another nice touch is the newspaper

headline at each end of the game you will get one should you successfully dock Red October in the West but not all countries are willing to accept a state of the art submarine (with a nuclear capability) and they will do their best to fend you off

Lots of features lots of options and lots of colourful graphics all you need is lots of time **C G**

Touchline
Name *The Hunt for Red October* ***Supplier*** *Argus Press Software Victory House Leicester Place London WC2H 7NB* ***Tel*** *01-439 0666* ***Machine*** *Amiga* ***Price*** *£14.95*
Originality *9/10* ***Graphics*** *8/10* ***Playability*** *7/10* ***Value*** *7/10*

Western Games

Now, this is a novelty! If you want to learn how the wild west was really won then this game is for you No shooting injuns here just good wholesome family entertainment such as spitting shooting beer glasses (using the village idiots as target bearers) eating as much food as you can (but you have to keep it all down) and arm wrestling

The games on this double disk package are bright, vibrant and very very silly Instead of going for realism the programmers of this little gem have decided to make it look like a cartoon or a comic strip and their attention to detail has made what is one of the most graphically inviting games around for any machine on the market

This is I think the first wholly German program I have seen for the Amiga released by a software house called Magic Bytes it is an original game a bit like the "Olympics" games currently available for the Amiga but on a more down to earth level

You will need a joystick to play this one and it will get some pretty heavy bashing as it is one of those games that requires fast pushing and pulling on the stick in order to control your character on the screen

The first game you play is the bacey spitting competition (like I said good clean wholesome stuff) You chew as much bacey as you can without swallowing you select the force at which you want to chew select the angle of the spit and simply gob away!

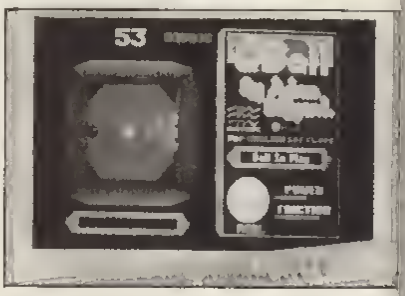
Likewise the beer shooting competition is similar you first draw your gun and roughly aim the cross over your target (ranging from glasses bottles kegs and so on) you select the right moment to fire and then shoot

All of the competitions are very difficult to play to begin with but after a while you pick up on the rhythm of the game and after that it is plain sailing!

A very nice series of games to look at – and great fun to play, especially with a second player as your opponent Definitely one to bring out at a party! **C G**

Touchline
Name *Western Games* ***Supplier*** *Artolasoft 9 Disraeli Road Putney London SW15 2DR* ***Tel*** *01-785 4265* ***Machines*** *Amiga* ***Price*** *£19.95*
Originality *7/10* ***Graphics*** *8/10* ***Playability*** *7/10* ***Value*** *7/10*

Q Ball



English Software have recently converted and upgraded the Atari ST version of this game for the Amiga It is a sort of 3D Zero gravity game of snooker with mouse control and full colour graphics

The problem is that while Q Ball is very easy to learn the game is nigh-on-impossible to play and control properly

I have tried this game out with many different friends (most of whom already have STs of Amigas) and none of them could control the ball properly – even after a month of full playing So in the end we satisfied ourselves with randomly aiming the ball and hitting the cue as hard as we can (more logical attempts proving fruitless)

The graphics looks nice the sound effects are very nice and the music is good (when it lasts) but other than that Q Ball is best left to lesser machines such as the Atari ST – it is not worth playing because there isn't a game here **C G**

Touchline
Name *Q Ball* ***Supplier*** *English Software North Parade Parsonage Gardens Manchester M60 1BX* ***Tel*** *061-835 1358*
Machine *Amiga* ***Price*** *£19.95*
Originality *9/10* ***Graphics*** *9/10* ***Playability*** *1/10* ***Value*** *7/10*

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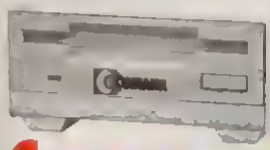

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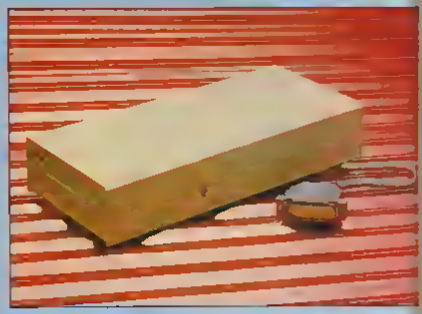

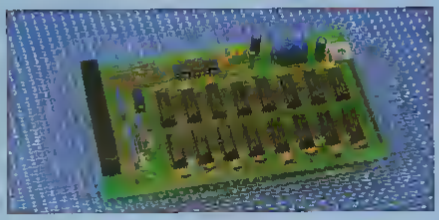

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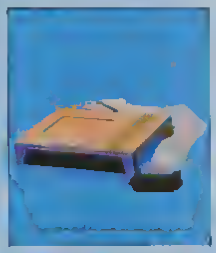

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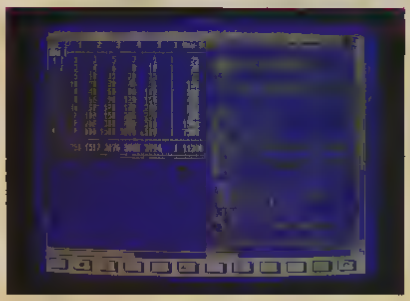
Superbase Professional

Superbase fulfills its promise with the addition of a forms designer and programming language

By Anne Owen



Superbase is instantly recognisable by the VCR style controls (an idea now borrowed by other database programmers) has been evolving over at Precision in Surrey into Superbase Professional

The new software tidies up some of the old and features new elements such as a text and forms editor The most important addition however is that of a programming language for Superbase The designers have not come up with some esoteric database language for us to learn but have sensibly made the familiar structures and keywords of Basic available for Superbase programming

It's worth reminding ourselves of some of the unique features of Superbase, all of which are now programmable A database file can have an external file linked to it which can contain text, screen pictures or music data The pictures can form a slideshow or can be dumped to a printer the music can be played back at a tempo programmed from Superbase The equivalent program keywords are SHOW and SCRDUMP

Superbase supports the Amiga's speech facilities and the program language provides the keywords SAY USING followed by the parameters for pitch inflexion etc

Superbase files can cross reference with other files For instance a holiday record file might have fields common to a firm's personnel file with holiday entitlements in it In this way updating on the personnel file also effects the variables in the holiday file itself Some relevant program keywords are CREATE and INDEX

Superbase strives to allow English language style expressions where possible, e.g the relative concepts of time TODAY and NOW and LIKE string matching function, all available via the programming language

Superbase Basic

When the program option is selected an edit window opens just like Amiga Microsoft Basic A program menu is available with Run New, Edit Open

Close Save Print and Remove options You can move into the database window at any time, or open a command line window for directly typing in program commands

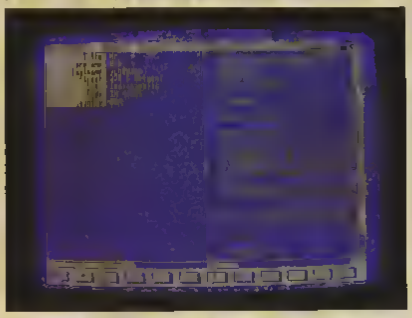
The program editor has many of the features of the text editor including delete word delete to and of line, clear line split line, join line insert mode on/off and undo making program writing a pleasant task

Familiar (to Basic users) keywords are ABS ASC, ATN, CHR$ COS DATA, DIM INT LEN SQR CLS INSTR$ LEFT$, LIST LOG MID$ MOD NEW, READ, REM RESTORE, RIGHT$, RND RUN (from memory or disk) SGN, SIN SQR STR$ TAN and VAL

As with many keywords, LOAD and SAVE can be used with parameters to give them [illegible] DOS command from disk for execution before returning control to the program DISKSPACE is also useful when files are filling up fast EOF detects the end of a Superbase file

Superbase deals comprehensively with time indeed there seems to be a strange preponderence of time based keywords DATE$ DAY DAYS, HRS MINS, DATEBASE, TIME$ THOUSECS, TIMEVAL TODAY, NOW, YEAR MONTH MONTH$ SECS All are available to define the date and time format and express or assign the required moment down to milliseconds!

String handling is a vital part of database work carried out in Superbase by the following keyword commands FCASE$ LCASE$ LTRIM$ UCASE$ TRIM$ and



than normal in Basic They can deal with a tokenised program with text with a query file an update file or function key definitions and can add one file to another

CHAIN loads a new program but retains variable information CLEAR and ERASE clear variables while SET interprets variable settings and commands from a disk file ERRNO ERR$ ON ERROR and RESUME help with error tracing and FREE gives a memory free figure

The main control structures are FOR TO NEXT IF THEN ELSE and WHILE WEND There are no line numbers but you can GOTO or GOSUB to a label and (of course) RETURN to the main flow of the program ON GOTO and ON GOSUB are also available

DOS like commands COPY DELETE, DIRECTORY RENAME and SETBUFFERS are available from within a program CALL calls up any SPCAES Number pi[illegible] with FIX

The cursor position is [illegible] and ROW and is assigned by LOCATE and HOME NEWLINE moves to the next line REPLICATE reproduces a character a specified number of times and SET PAGING controls the page scrolling while WAIT does just that Bold underline and italic text can be easily turned on and off

PRINT selects the printer as the output device PCOL and PROW detect the printhead position and EJECT can be used to ensure sensible page breaks for printed output

Tale of Two Users

I put myself initially in the position of a user setting up forms for presentation on screen and paper including mail merging and reports and secondly in the position of a programmer/consultant creating an easy to use system which inexperienced operators could use efficiently

Forms

For the former the forms editor is the first port of call Forms have the advantage that they present information on screen or on paper in a manner designed by the Superbase user Specified information from a combination of files can be displayed clearly and attractively

Forms are designed page by page, a printer page not a screen full and each form consists of three pages Pages can be saved and reloaded and their positions within the forms [illegible]

The [illegible] thing you might do is to print the two page form to an ordinary dot matrix printer a page at a time and then match them up for an A3 photocopy If you can sheet feed your printer then an A4 form design can be printed once photocopied many times and the resulting forms put through the printer to have individual details filled in

Calculated fields which change dynamically can be added to the form They are attached only to the form, not to the file The report functions SUM SD MEAN MAX MIN and VAR are available

Any of the files supplying information to the forms can be made the master file and new selection criteria applied to the records

The form can appear in 4 8 or 16 colours and the design itself is carried out with the aid of the following 'objects areas (solid and patterned fills), boxes lines images (loaded from

other paint programs) text and fields (supplied by the data files) The object is placed on the form in the desired position and can be moved copied edited or deleted An invisible grid can be turned on to help alignment of objects and a 'reduced' preview of the complete form can be displayed Field objects can have justification adjusted can be set as read only and can be automatically given a border and/or the field name before the data

Printing of the form can be in text or graphics modes Each object can have a value assigned to it which indicates whether it is to appear on a printout or not Some design features (especially colours) may look excellent on screen but confusing on paper

Function Keys and Automatic Reports

For performing repetitive but limited actions on the data the user needn't go as far as writing a program Function keys can be used very effectively Commands can be assigned to the function keys and activated with a single key press For instance loading a letter into the text editor and extracting a couple of names and address fields for merging and printing KEY displays all the current definitions which can be loaded and saved as required Programming function keys with often used strings also helps with data entry The text editor has a complete set of menus of its own and is capable of 64K documents A format ruler can be placed at any point in the text There is help on key presses and the mailmerge simply involves inserting field names in the text between the & character (Wordstar style)

Another boon to this user is the automatic generation of reports without the need for programming The reports are designed on screen with the forms editor On saving the editor automatically creates a report file and an associated Superbase program file which will reproduce the report on screen or printer including title page and totals page if required

Programming

Because the command language matches closely the menu options in Superbase any regular user can turn his hand to programming and quickly get a feel for the actions which will result from a program The professional programmer can go a step further to automate data processing or design an interface suitable for a particular Superbase application

It is possible to create files from scratch within a program via CREATE, ADD MAKE and INDEX There are also the corresponding QUIT REMOVE FILE and REMOVE INDEX Files can be saved with PROTECT and for further security a password added with PASSWORD

Record creation involves the use of BLANK ENTER and STORE keywords Field values can come from the user with EDIT (whole record) or ASK (specific input) or values assigned directly from DATA in the program or INPUT from disk files POINTER can be used to control the pointer in an ASCII file when extracting data

REQUEST is a vital command which brings up one of the variety of existing Superbase dialogue boxes You can manipulate menus with MENU ON and CLEAR (menu) Presentation as record table or form can be set and records selected with SELECT – CURRENT DUPLICATE FIRST, KEY (with string parameter) LAST NEXT, PREVIOUS and REMOVE A path can be set to a validation file (which checks data entry) and suitable error message issued Data entry can also be forced if necessary

WHERE sets a filter on the fields selected (by SELECT) for report output or for other query applications, such as sorting merging files or simply retrieving data Sorting is carried out by SELECTing the fields upon which to sort and ORDERing them either ASCENDING or DESCENDING

Forms, reports and mail merging can all be handled from within a program Both function key definitions and programs can be loaded automatically by creating a program file called START which Superbase will load and execute on startup allowing a 'turnkey' system to be easily implemented

Conclusions

A journalist colleague recently remarked that the potential of the Amiga hadn't been realised True, but Superbase is one of a new generation of software now realising it The creative (graphics page design fonts speech and music) is combined with the practical power of a relational database The one limitation you are probably already aware of is your printer The appearance of fonts on screen is often much better than on a graphics dump The Amiga does not have special font libraries to accurately reproduce these, even on a laser printer

The designers of Superbase haven't made any assumptions about what the business user will want from the database After all these days the business computer is more than likely used in the engineering of science departments as much as in administration A scientist will appreciate the precision of numbers and the accurate dates even including changes to the calendar in 1752

Superbase like all good software, creates its own working environment The new features of Superbase professional allow the powerful features to be extended or for the environment to be restricted for a particular category of use or user

The fast Amiga interface shines through but I must mention as I have with all the disk based software, that the performance of the Amiga floppy disk drives inevitably slows down the movement between some operations Users who have Superbase up and running daily would benefit indeed profit from a hard disk (they start from £694 from Precision)

When Superbase was demonstrated to me on a 512K A1000 the program very quickly ran into memory problems These were instantly cured by the fitting of a Promiga megaboard 2 from Progressive Peripherals I suggest if you are working with 512K that you discuss this with Precision before purchase

The documentation is of a high standard, one manual for Superbase, another for the new Superbase professional features Although these are general purpose manuals Amiga users can easily avoid the material about Superbase on Atari and MSDOS though it is obvious that many Amiga features such as speech and external music files are missing from the inferior versions!

Upgrade prices will be available and registered users will be mailed by Precision

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Precision Software 6 Park Terrace Worcester Park Surrey KT4 7JZ Tel 01-330 7166

Contributions

So you own a Commodore? So you've written some programs? So why haven't you sent them to us?

Your Commodore is always on the look out for new programs hints and tips, articles and even regular series In fact if you have something that you think could be of use to other Commodore owners we want to hear about it

So if you have got something which you think we may be interested in How do you go about submitting it to us?

Below you will find a list of guidelines that will help us to deal with any item that you send in to us We don't expect everybody to be the next William Shakespeare but if you do follow these simple rules then it will make our job a lot easier

1) If possible all material sent to the magazine should be typed or printed out on a computer printer

2) All text should be double spaced i e there should be a blank line between each line of text You should also leave a margin of about 10 characters around the text

3) On the very first page you should put the following:
Name of the article
Machine that it is for
Any extras required – disk, printer etc
Your name
Your address
Your telephone number

4) The top of every page should have the following information on it
Abbreviation of the article title
Your name
The page number

For example, suppose you had submitted an article on C64 interrupts You should put something like the following at the head of the page

Interrupts/J Smith/1

5) Please make sure that you do not make any additional marks on your text especially underlining

6) Try and write in clear concise English it does not have to be a work of literature but it must be comprehensible

7) On the bottom of each page you should put the word MORE if there are more pages to the article or ENDS if it is the last page

8) If possible, enclose a listing of all programs

9) Under no circumstances use a staple to hold the pages together Use a paperclip instead.

10) Programs should be included on either disk or tape Make sure that you SAVE two copies of every program so that we have a better chance of loading them if problems occur

11) Programs under 10 lines can be included in the text If your program is longer than this you must enclose a disk or cassette

12) If your article needs any artwork then supply clear examples of what is needed We don t expect you to be an artist but we do need to see what is required

13) Photographs, if necessary, must be either black and white prints or colour slides We can take shots ourselves so don t worry about this too much

14) Submissions of any length are welcome If you have a five line routine that you think may be of use to someone else we welcome it just as much as a full blown six part series

15) Payment varies quite a lot and depends on quite a number of factors, such as complexity of program, presentation of program, number of magazine pages it takes up etc Payment is generally between £10 00 and £800 00

16) All payments are made in the month that the magazine containing your article has appeared in print

17) If we do find your submission suitable for inclusion in the magazine we will write to you giving the terms of publication, the rate of payment and an agreement form Prompt return of this form will allow us to use your program as soon as possible.

18) If you want the program returning to you, should we find it unsuitable for publication, then you should enclose a stamped self addressed envelope

19) The last and most important point to make is 'get writing', we are waiting for your articles

I.Q.

Strain your brain with the recent intellectual releases

Knightmare

Welcome watchers of illusion to the castle of confusion If you recognise these opening words then you're already one of the dedicated followers of ITV s cult roleplaying TV game Knightmare, in which teams of advisors guide a knight blinded by a full facial helmet around a computer generated graphic dungeon The graphics in the TV program were created by two Supernova computers which are slightly more powerful than your average C64 so this is obviously going to be a cut down version from Activision

You play the knight who must find his way out of the Knightmare by solving his problems and overcoming the monsters and go to the second wilderness section To help you in your quest you can seek advice from two Oracles However one is good and the other is evil so you should listen to both sets of advice but follow none to find the successful middle path You will also hear from Treguard the Dungeonmaster whenever you waste time or attempt pointless actions or anything else that annoys him

Your quest is told in 3D graphics which is displayed on the turning pages of a book alongside a burning candle which represents your lifeforce As monsters hit you, and poison and traps take their toll the level of the candle will plummet to end your game

You control the Knight s movements with a joystick and his actions with adventure style commands selected from menus or by pressing the first letter of the command object person or sell This may seem an efficient method – however it can cause you problems as it takes a long time to throw a rock while a ghost and a demon chomp at your heels

Unfortunately the game also suffers from a few annoying bugs such as if you throw a rock in one room and then enter the other the same rock comes flying across to meet you! To add to this the graphics are crude and the

action is far from the combination of traditional adventuring and arcade action promised on the packaging.

There is no way a C64 can mimic the efforts of two Supermovas and live actors but surely it can come closer than this. Perhaps the approach used in Dragon's Lair and Escape from Singe's Castle would have been better. Disappointing I'm afraid. **TH**

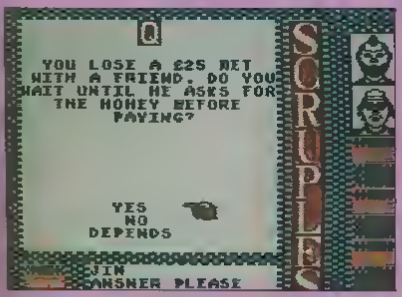
Touchline
Title *Knightmare* ***Supplier*** *Activision 23 Pond Street Hampstead London NW3* ***Tel*** *01 431 1101*
Machine *C64* ***Price*** *£9.99 (Ca) £14.99 (Disk)*
Originality *6/10* ***Playability*** *4/10* ***Graphics*** *5/10* ***Value*** *5/10*

Scruples

This is a computer version of the best-selling board game which is best described as a sort of thinking man's Trivial Pursuit.

The game poses a series of moral dilemmas to each player in turn. It is up to you whether you decide to answer truthfully or bluff your way out of things but you are always likely to be challenged in which case you will have to justify your answer. The other players will then vote as to whether they believe you or the challenger.

A typical question would be: 'If you saw your boss coming out of a cinema that showed exclusively blue movies would you tell your colleagues at work?' Personally I would only bother if I recognised him appearing in one of the blue movies!



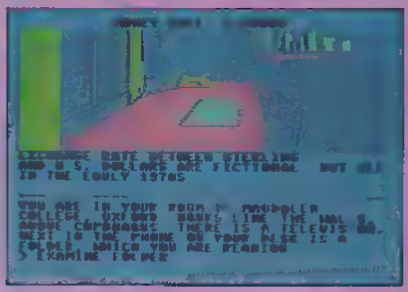
Between three and ten players either human or computer can take part in a game. Setting up the game is somewhat tedious as you must select from sixteen different faces for each computer player and define personality traits for the humans. This involves defining on a bar chart how you see yourself for each of twelve different characteristics. These range from personal integrity and greed to family relationships. The computer then adjusts your inputs slightly and presents you with a new graph at the end of the game according to how you answered the questions.

The game itself depends on getting rid of your dilemma cards before anyone else does. You have an answer card (yes, no or depends) which is kept secret from the other players and the trick is to ask questions which will force players to give the same answer as you have on your card.

The problem with the game is that to get the best out of it you need to be watching the other players and judging their reactions. Against computer opponents this is obviously impossible. Again with human opponents making them look away as you examine your answer card destroys the atmosphere of the game. The conversion of the game is excellent: no complaints there. I just think that this is the wrong sort of game to be converted in the first place. Whereas it works well with a group of you sitting round a table it fails miserably when you all move to the small screen. **GRH**

Touchline
Title *A Question of Scruples* ***Supplier*** *Leisure Genius/Virgin 2/4 Vernon Yard Portobello Road London W11 2DX* ***Tel*** *01 727 8070* ***Machine*** *C64* ***Price*** *£12.95 (Ca) £14.95 (Disk)*
Originality *8/10* ***Graphics*** *6/10* ***Playability*** *3/10* ***Value*** *3/10*

Not a Penny More, Not a Penny Less



It was surely only a matter of time before Jeffrey Archer found his way somewhere into the computer world. After all his list of appearances in recent years has been considerable – television, books, the stage, political rallies and the High Court. Domark have affected the link up and produced a games based on Archer's first book, Not a Penny More, Not a Penny Less.

The book, like most first novels tends to be semi-autobiographical. Four totally unconnected people are persuaded to sink their life savings into shares in an oil company. There is the promise of enormous profits but the deal turns out to be one large con trick and the punters lose one million dollars between them (early 1970s prices).

You play one of the four Stephen Bradley and it is up to you to contact the other three and persuade them that you ought to try and get back all the money that you were swindled out of Hence the title of the game

That is the gist of the story and a very good one it is too for whether you like Jeffrey Archer or not he does tell an excellent tale even if his literary powers do not feature among the world's greatest

The games itself is a different matter and I am afraid that it takes the art of adventuring back into the dark ages The list of problems and bugs is phenomenal and I can do no more than mention some of the ones that occur at the start of the game

The parser is pathetic Even by the standards of games written five years ago it is dire There is no inventory command so that if you pick something up there is no way you can find out what you are holding at a later stage of the game Directions have to be typed out in full e g 'go north east' rather than just NE Not that you can move anywhere anyway At least not until you have solved certain puzzles The game is entirely linear in construction so that everything must be done in an exact order Get it wrong and it is effectively game over although you are not told that at the time

Although many items are described in the location descriptions trying to examine them further is by and large a waste of time In some cases they disappear totally For example you start off in your room in college (you are a university lecturer) In the room is a bookcase and a cupboard Or at least there are until a policeman arrives and catches you with an incriminating dossier open Then they disappear If however you manage to close the dossier before the policeman arrives after he as gone re-examination reveals a vital phone number that you managed to miss first time around

Still the bugs haven t finished Phoning Scotland Yard puts you through to your stockbroker (perhaps this is an intentional dig at BT) Examining the top names in the dossier gives you a description of your rooms again I managed to go and see this first character a doctor on three occasions within one game each time following exactly the same sequence of events because no flag had been set to instruct the program only to allow things happening once

There are graphics but they are of the line variety complete with a fill routine that takes ages to complete The program also boasts an impressive speech routine but there is so much hiss that it sounds like a badly tuned radio station Pronunciation isn t all that it might be either Magdalene College is pronounced a mag-da-lin instead of maudlin

Perceptive readers will notice that I was not too impressed with this game In fact I would go so far as to say that this is the worst full priced adventure I have played for several years The package includes a copy of the book which is necessary to find out what you are supposed to be doing My advice is to go and buy the book and ignore the game especially at just under fifteen pounds for a cassette version

G R H

Touchline
Title Not a Penny More Not a Penny Less **Supplier** *Domark Domark House 22 Hartfield Road Wimbledon London SW19 3TA Tel 01 947 5622* **Machine** *C64* **Price** *£14 95 (Cu) £16 95 (Disk)*

Eye

Another computer version of a board game and one that is almost impossible to describe if you haven t seen it before

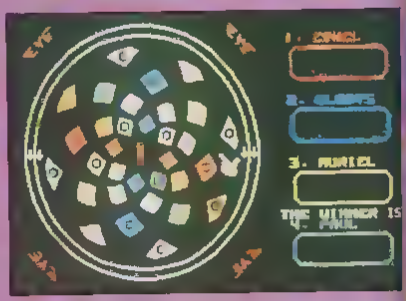
The playing area is a circle with four squares of eight different colours showing at any one time The position of these squares is altered by rotating two spirals within the circle The object of the game is to place the requisite number of your own pieces on your own colour before your opponents manage the same feat How many pieces you need is determined by the number of players

You have a number of moves determined by the highest number of pieces you have on any one colour A move can consist of sliding one of your own pieces to an adjacent square or twisting one of the two spirals to change the pattern of the colours either with the object of hindering one of your opponents or helping yourself If that wasn't complicated enough you can also control neutral colours and at the beginning of each turn you can move any of your opponent's pieces that happen to be lying on a colour you control

Although it all sounds very complicated you soon get the hang of what s going on and the game becomes quite addictive One advantage of the computer version is that there are several game variations that are not possible in the board game but against that one of the most enjoyable parts of the board game is moving the spiral and watching the colours change In the computer version this effect is lost is the screen blanks out and redraws with the new pattern

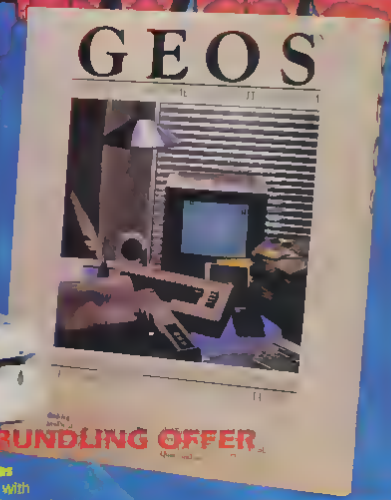
Eye is the sort of board game that converts well to the computer and fans of strategy games like this who are in constant need of someone else to play against will not be disappointed Two minor quibbles The printed instructions are somewhat sparse and could usefully have been expanded and also there is a silly grammatical error when you are setting up the game (whose instead of who's) I know it s trivial but it does have the effect of making the finished product look unprofessional

G R H



Touchline
Title Eye **Supplier** *Endurance Games Prism Leisure Corporation Unit 1 Baird Road Enfield Middx EN1 1SQ Tel 01-804 8100* **Machine** *C64* **Price** *£12 95*
Originality *9/10* **Graphics** *7/10* **Playability** *7/10* **Value** *7/10*

DYNAMIC DUO



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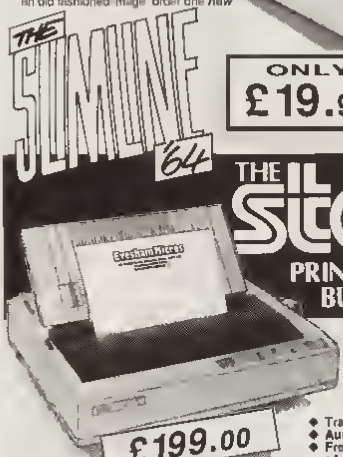

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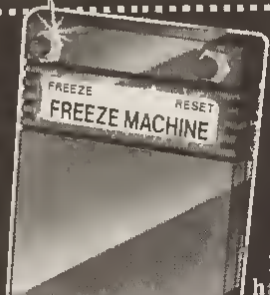

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Welcome Back

It's good value for money all the way with our handy compilation of re-released budget games

By Tony Hetherington

When you go into a shop to buy a game you're usually greeted with a bewildering array of titles, some of which are treasures, others are terrors. For full-priced games the answer is simply to read through *Your Commodore's* review pages and then go out and buy with confidence. Even budget games have the same pitfalls as £1.99 for a bad game is good money wasted. However if you look carefully you can usually pick up a bargain as you can find games that were top of the full-priced games enjoying a cut-price comeback. Here are ten to look out for if you want to bag a bargain.

Football Manager

Football Manager has got to be one of the most successful games ever. Launched in 1982 on the Spectrum and converted later for the C64 and C16 this game captures the problems of football management and presents them in a ridiculously addictive form. Although the game was written in Basic the snail pace action didn't deter it's players staying up all night to play just one more season. I don't think my neighbours will ever recover from the time I won the league and cup double!

The good news is that Addictive Games is adding the finishing touches to Football Manager II and even better news is that you can pick up a copy of the original from Prism Leisure for only £2.99.

Touchline

Title *Football Manager* ***Supplier*** *Prism Leisure Corporation Unit 1 Baird Rd Enfield Middlesex EN1 1SJ* ***Machine*** *C64* ***Price*** *£2.99* ***Originality*** *7/10* ***Playability*** *10/10* ***Graphics*** *4/10* ***Value*** *10/10*

Decathlon

One of the first and in my opion the best of the decathlon games has been re-released as part of the Firebird £1.99 range. Both you and your joystick must endure a punishing schedule of events that includes the 100m, 110m hurdles, long jump, high jump, pole vault and the exhausting 1500 metres. The key to success is joystick waggling so make sure you have a stick that can stand the pace before you attempt to go for gold.

Touchline

Title *Decathlon* ***Supplier*** *Firebird 64/76 New Oxford Street London WC1A 1PS* ***Tel*** *01 379 6755* ***Machine*** *C64* ***Price*** *£1.99*

Originality *7/10* ***Playability*** *10/10* ***Graphics*** *6/10* ***Value*** *10/10*

Boulderdash

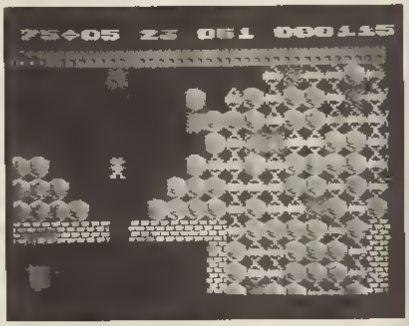
Boulderdash is one of my all time favourite arcade games and has everything that an arcade game should. It's simple to learn, horribly addictive, presents you with fiendish puzzles that you must solve in a race against the clock and it drives me mad!

The star of the game is Rockford, a little character that must collect diamonds while avoiding crushing boulders and deadly amoebas, fireflies and dragonflies.

Boulderdash was originally written by First Star and imported by Beyond and now is back for a well-deserved encore courtesy of Prism Leisure.

Touchline

Title *Boulderdash* ***Supplier*** *Prism Leisure Corporation Unit 1 Baird Rd Enfield Middlesex EN1 1SJ* ***Machine*** *C64* ***Price*** *£2.99*
Originality *8/10* ***Playability*** *10/10* ***Graphics*** *6/10* ***Value*** *10/10*



Attack of the Mutant camels

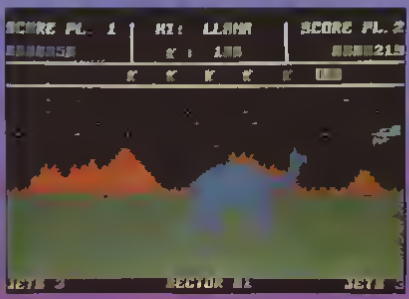
The first and best bout of Minter [illegible] as 90 feet genetically altered camels are sent to destroy the world. Armed with a short supply of high speed laser jets you must take on the massive beasts as they march relentlessly across

the scrolling landscape.

Unfortunately, genetically altered camels are formidable beasts and are coated in many layers of armour, which you must blast away while avoiding the acid bolts that the [illegible] horrors spit at you. Clear the screen and you'll live to face another batch of conquering camels.

Touchline

Title *Attack of the Mutant Camels* ***Supplier*** *Mastertronic 8-10 Paul Street, London EC2A 4JH* ***Tel*** *01-377 6880* ***Machine*** *C64* ***Price*** *£1.99*
Originality *9/10* ***Playability*** *9/10* ***Graphics*** *5/10* ***Value*** *10/10*



[illegible]

Another Act [illegible] Pitfall [illegible] converted [illegible] in the game [illegible] Pitfall Harry, adventurous treasure hunter and explorer is [illegible] the [illegible] jungle and [illegible]

As you'll [illegible] easy you'll have to leap [illegible] crocodile pit [illegible] across the [illegible] leap by jumps that [illegible] look simple but it is [illegible]

Touchline

Title *Pitfall* ***Supplier*** *Firebird, 64/76 New Oxford Street, London WC1A 1PS* ***Tel*** *01-379 6755* ***Machine*** *C64* ***Price*** *£1.99*
Originality *6/10* ***Playability*** *8/10* ***Graphics*** *4/10* ***Value*** *10/10*

Fight Night

The new look, Mastertronic owned Americana range boasts and impressive line up including this one for light fans.

Fight Night allows you to build your own boxer right down to the colour of his shorts and then prepare him for the ring, through a tough training and sparing program before tackling the opponents that stand between you and the title. Don't let appearances deceive you as what looks like an easy opponent can have a killer blow.

Treat Dip Stick with more respect than what you think he deserves as his speciality can ruin more than your career.

Touchline

Title *Fight Night* ***Supplier*** *Americana 8-10 Paul Street, London EC2A 4JH* ***Tel*** *01-377 6880* ***Machine*** *C64* ***Price*** *£1.99*
originality *6/10* ***Playability*** *9/10* ***Graphics*** *8/10* ***Values*** *10/10*

International Karate

Players who prefer [illegible] their opponents to a pu[illegible] ual Karate now re-[illegible]

The game fi[illegible] Sydney and on to [illegible] lay into a human [illegible] your sixteen Kug[illegible] bouts you could [illegible]

Touchline

Title *International* [illegible] *Operation Unit* [illegible]
Machine *C64* ***Price.***

***Originality**, 4/10 **Playability**, 7/10 **Graphics**, 6/10 **Value** 10/10*

Take a deep breath and a firm hold of your nerves and dive into this atmospheric nightmare. Armed with only a bow and arrow you enter the forbidden forest to find and defeat the Demogorgon. Through day and night you must fight for your life as a stream of giant spiders, enormous bees, killer [illegible], massive frogs, a fire breathing dragon and the Demogorgon himself attack you and force you back into a [illegible] and bloodthirsty end.

The Forbidden Forest may look a little dated but for £1.99 it is worth a look.

Touchline

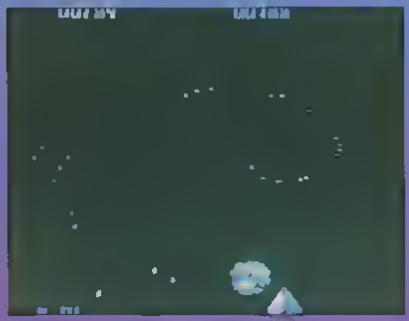
***Title** Forbidden Forest **Supplier** Top Ten **Machine** C64 **Price** £1.99*
***Originality** 6/10 **Playability** 7/10 **Graphics** 4/10 **Value** 9/10*

Crazy Comets

The old classic Mad Planets arrived on the C64 through Martech's Crazy Comets and is back again as part of Mastertronic's Ricochet range. Your job is to destroy the new planets that are being formed and then are spinning out of control. The action is fast and furious and accompanied by a Rob Hubbard soundtrack.

Touchline

***Title** Crazy Comets **Supplier** Mastertronic, 8-10 Paul Street, London EC2A 4JH. **Tel** 01 377 6880. **Machine** [illegible] **Price** £1.99*
***Originality** 4/10 **Playability** 9/10 **Graphics** 8/10 **Value** [illegible]*

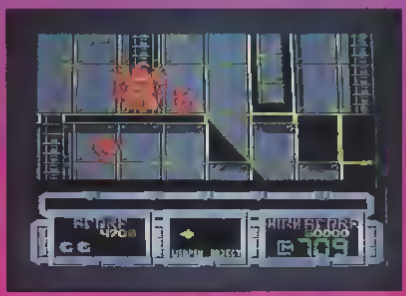


Future Knight

This former Gremlin Game was a challenging mixture of platform panic and arcade skill as you scour a crashed spaceship packed full of evil robots and poisonous pools of your beloved maiden in distress. Twenty levels of vertical ladders and scrolling action await the futuristic knight in shining armour.

Touchline

***Title** Future Knight **Supplier** Gremlin Graphics Limited, Buntingford, Hertfordshire SG9 9AB **Machine** C64 **Price** £2.99*
***Originality** 8/10 **Playability** [illegible]/10 **Graphics** 7/10 **Value** 10/10*



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Sysres

Add hundreds of new functions to BASIC while using only 33 new command words

By Allen Webb

Reviewing this package gave me a deep feeling of nostalgia in that it took me back to the good old CBM PET days. After the initial Palo Alto HELP chips there emerged a number of advanced tool kit packages, the most notable of these being the POWER chip and VICTREE. Certainly there were a number of similar British products but these were feeble efforts compared to the American packages. SYSRES demonstrates that things haven't changed and is the C64 equivalent to the excellent POWER package for the PET.

Enough of the spiel, what's SYSRES all about? Basically it is a toolkit to allow the easy manipulation of disk commands, programs and files.

First we have extensions to the disk operating system. These are commands which replace the extremely tedious way of accessing the disk.

```
OPEN 15,8,15,"  ": CLOSE 15
```

These allow you to copy files, scratch files, call the directory, etc by use of simple commands such as @$ and »S. OK, so that's fairly standard. One rather nice command is the list from disk (@L). This allows you to display a file direct from disk without loosing any programs in memory. The command handles sequential, relative and program files. If you think about it, this is a very handy facility with a wide range of uses.

The remainder of the package comprises about 30 other commands. These range from the usual RENUMBER, AUTO and DELETE commands through enhancements to RUN, LIST and CMD to the positively phenomenal CHANGE. Before describing some of these commands, it is worth making some points about the author's approach to the design of the package.

First of all, this package can be considered to be a true operating system. A range of enhancements such as bi-directional scrolling, key repeat, redefinition of all keys and default devices are wedged into the system. Having done this, the system recognises if you run a program and disconnects and reconnects functions to ensure that optimum speed is achieved.

Secondly, rather than just provide the basic commands, the author has crammed in as many options as his fevered imagination can dream up. RENUMBER, for example, allows you to renumber the whole program, part of it and even move a block of code. Commands such as CHANGE are even more complex.

Thirdly, maximum use is made of the many ways of storing and handling files, allowing some extremely involved operations.

For users of BASIC, there are a full range of editing tools. These include:

DELETE
RENUMBER
FIND
CHANGE
TRACE
DUMP
WHY
APPEND
MERGE

These allow you to write code, run and debug and edit it in a simple manner. Rather than slavishly describe all of these commands, I will mention those which were most outstanding.

FIND. This allows you to look for a specified pattern of characters. The commands is extended however to allow you to specify which position in each line to search, specify the areas to search and to specify pattern matching with "wild cards".

CHANGE. This finds a specified pattern of characters and replaces it with another pattern of characters. The command supports all the options of FIND with a claimed 700 valid combinations. The potential of the command is quite phenomenal, allowing operations which would normally be very difficult to achieve in BASIC. You can, for example, concatenate lines to longer than 80 characters, remove REMS, find unresolved references or start a line with a number. I found this a potentially powerful command which required a lot of concentration, preferably with a cold wet towel wrapped around your head.

TRACE. Most trace commands give some form of a scruffy list of line numbers on the screen which at best is unintelligible and at worst wrecks the screen format. With SYSRES you have the choice of two optional windows at the top of the screen. The right hand window lists part of each line as it is executed and the left hand one gives the value of each variable every time it is redefined. The option to pause or slow execution or print the windows ease the viewing of the trace.

MERGE. This is a true merge which will interleave the program lines on disk with a program in memory.

For machine code users the commands are even more useful, allowing the preparation and editing of source codes. To allow the manipulation of source codes suitable for use with assemblers such as the

ICL assembler PUT and GET are provided. This allows you to take advantage of the superior SYSRES functions while maintaining compatibility with the assembler. The PUT command strips off the line numbers and saves the program as a sequential file. Very handy. To aid debugging of machine code a BREAK line is provided. This is accessed in the usual way via a BRK instruction or from a MON command. If no monitor is present, details of the page where the break occured along with the contents of the registers, etc. are given. If a monitor is present, it is entered. The package comes with a public domain monitor (XMON) with several versions at different addresses. The system also seems to work with other monitors, however. One rather bizarre feature is that the bidirectional scrolling is active, even from within the monitor. This allows you to LIST a source code or BASIC program without leaving the monitor. This offers some useful debugging features.

Those of you who use binary files will know the irritation that the BASIC pointers are left so that any attempt to LOAD or amend programs get an OUT OF MEMORY error. To allow for this three commands are provided. BLOAD and BSAVE allow the storage and retrieval of binary files without this problem. BRUN loads a binary file and commences execution at the start address of the code. This command also allows you to transfer parameters provided that your code requires this. The following syntax is therefore accepted

BRUN myfile ',parm1 parm2

A slightly stranger method of handling files is provided by the EXEC command. This command is aimed at providing a means of booting key definitions and other more esoteric functions. The BASIC program is saved as a Sequential file which can then be handled by EXEC.

Most toolkits provide a means of redefining keys and SYSRES is no exception. Generally these are confined to function keys but SYSRES, somehow predictably goes much further. On boot-up 18 of the alphabet keys are defined with common BASIC and SYSRES commands which are accessed by pressing the LOGO key with the appropriate alphabet key. The KEY command can be used to additionally define most of the keys when used in conjunction with the SHIFT key. Redefinitions can be set up manually or by loading definitions via EXEC.

An important feature of this type of software is the need to give nicely formatted output. When listing source code or BASIC programs SYSRES uses white for line numbers and the normal ink colour for the rest of the code. The normal scroll is changed so that you cannot accidently lose the screen contents by trying to move the cursor off the bottom of the screen. Instead where a program is longer than the screen you can list in either direction – a much more civilized and controlled approach. LISTing long files can be paused by pressing the SPACE BAR or slowed by pressing CTRL.

EXTENDED EDITOR COMMANDS

/	[1]	Quick load from disk
†	[1]	Quick load from disk with auto run
APPEND	[1]	Append from disk to end of current program
AUTO	[1]	Auto line number (allows header)
BLOAD	[1]	Load machine language (binary) file
BRUN	[1]	Load and execute machine language program
CHANGE	[1]	Change pattern to another pattern
CLOSE	[2]	Close one or all files
CMD	[2]	Set output to file (does not send "READY.")
DELETE	[1]	Delete a range of lines from program
DUMP	[1]	Dump all scalar variables to screen or file
EXEC	[1]	Execute a file as keyboard commands
FIND	[1]	Find occurences of a pattern
GET	[1]	Read a sequential file into editor
KEY	[1]	Define a key as a special function
KEYS	[1]	Turn key functions on
KILL	[1]	Disable SYSRES™
KILL*	[1]	Disable SYSRES™ and unreserve memory
LIST	[2]	Improved BASIC LIST command
LOAD	[2]	Defaults to disk drive
MERGE	[1]	Merge from disk into current program
MON	[1]	Break to current machine language monitor
OLD	[1]	Restore program after "NEW"
PUT	[1]	Send program to disk as text file
RENUMBER	[1]	Renumber all or part of program
RUN	[2]	Run current program, ignores screen garbage
SAVE	[2]	Defaults to disk drive, allows replace
SETD	[1]	Set disk device #, allows multiple drives
SETP	[1]	Set printer channel, format mand, paging
TRACE	[1]	Select 1 of 3 trace/step modes and speed
VERIFY	[2]	Compare current program against disk/tape
WHY	[1]	Print position of last error
WHY?	[1]	List line of break or error
*	[1]	Send output to printer
#	[1]	Display current version of SYSRES™

[1] Absolute command
[2] Old command with improvements

DIRECTORY ORIENTED COMMANDS

/	Quick load disk file
†	Quick load file with auto run
APPEND	Append file to end of current program
BLOAD	Load machine language (binary) file
BRUN	Load and execute machine language program
EXEC	Execute file as keyboard commands
GET	Read file into editor
LOAD	Same as "/"
MERGE	Merge file into current program
PUT	Send text to disk, allows replace
SAVE	Save program to disk, allows replace
VERIFY	Compare current program against file
@L	List file to screen
*@L	List file to printer (allows formatting)
@Cd	Copy file to specified drive
@Sd	Scratch file from specified drive

EXTENDED DOS SUPPORT

@ (type "N" keyboard)
< (type "B" keyboard)
| (original keyboard)
> (for 'wedge' users)

These commands may be used interchangeably, to perform the following DOS SUPPORT functions.

@	Display disk status
@N	Format (HEADER) a new diskette
@I	Force initialize diskette
@V	Validate diskette (collect)
@D	Duplicate diskette
@C	Copy or concatenate disk file(s)*
@R	Rename file
@S	Scratch file(s)*
@$	List directory**
@U	Reset disk drive
@L	List disk file**

For those of you with printers things are even more attractive Many commands can be sent to a printer by prefixing them by * The nature of output and the device are set by the SETP command By adding 64 to the device number a formatted output can be obtained This format option does a number of things

- Line numbers are right justified
- Multi-statement lines are split with one statement per line
- Spaces are inserted between commands
- FOR NEXT loops are indented by level of nesting For example the following program

```
90      FORI=1TO20
100     FORJ=1TO20
110     FORK=1TO20
120     PRINTI*J*K
130     NEXT NEXT NEXT
        is printed as
90      FOR I=1TO 20
100     FOR J=1TO 20
110     FOR K=1TO 20
120     PRINT I*J*K
130     NEXT
        NEXT
        NEXT
```

The obvious value of this feature is that you can write a program as compressed as you like and still get a legible hard copy to aid debugging So far as I could establish SYSRES does not provide a Centronics driver

SYSRES is hidden mostly behind the ROMs and uses only a page of memory from $CF00 to $CFFF No indication is given of zero page or other memory usage so I assume that there are no specific compatibility problems The manual claims that the program attempts to analyse other cartridges or programs present which might give extensions to BASIC and make appropriate allowances I tried using SYSRES with the MIKRO assembler cartridge with no obvious clashes Clearly machine code users will need to take care as to which areas of RAM are used by their programs

Overall Impressions

I admit that I am wary of over praising a piece of software but in this case I am hard pressed to fault it So often I have seen software which dabbled with the job it's tackling but falls short due to carelessness or lack of attention to detail SYSRES is not one of them The author has gone out of his way to provide a full complement of features and to ensure that every detail is catered for The program shows an appreciation of the 64's operation and caters for the unusual but flexible file handling system

The program comes on disk and not only is it unprotected but the manual encourages the user to make a working backup The manual comprises about a 100 pages of text held in an A5 size ring binder The manual is well printed and reads well Unlike many products where the manual is the last and most poorly produced item the SYSRES manual is detailed and offers both examples for use and plenty of hints

The price may at first appear high but for what is a *tour de force* of programming this is an investment for anybody who wishes to use the 64 to the full

Touchline

Product *Sysres* ***Supplier*** *Financial Systems Software Ltd 2nd Floor Ambrian House St Mary's Street Worcester WR1 1HA* ***Tel*** *0905 611463* ***Price*** *£24 95*

The Alternative Collection

One of the up and coming budget software houses Alternative Software look all set to topple some of the top ten companies from their perch at the top Here's your chance to discover how good their games are

By Tony Hetherington

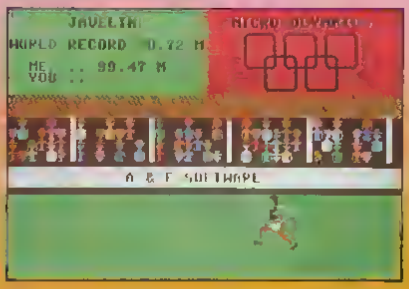
The budget games market is in a turmoil Once the sole contenders mighty Mastertronic has competition from firebird who has just picked up some Melbourne House games such as Rock n Wrestle Penetrator, Mugsy Mugsy's Revenge and Sherlock Holmes from the Australian Melbourne House This is even more incredible when you remember that Mastertronic bought the UK Melbourne House! If that wasn t enough the cut price Kings are facing the challenge of Code Masters who has gone from next to nothing to dominating the charts in under a year! Now there is a new player in the arena but can Yorkshire based Alternative Software breakthrough into the big time? As they say the proof of the pudding is in the playing so we tested ten new Alternative £1 99 games

JUDO UCHI MATA

A rerelease of Martech s Uchi Mata gives you the fight of your life as you take on a human or increasingly difficult computer opponents at the ancient Japanese art of unarmed combat Armed with just your wits and a good joystick you must literally get to grips with your opponent so you can then throw him with moves such as Tomoe-Nage O Soto Gari De Ashi Barai and of course Uchi Mata

To succeed with these moves you have to grab your opponent with a stronger grip than he's got on you and complete a series of joystick moves that will hopefully leave him flat on the mat At the end of the game your score is accumulated and converted into an award that ranges from white belt to black belt and beyond through the Dans A good beat em up that s a more subtle variation of the kicks and chops of karate

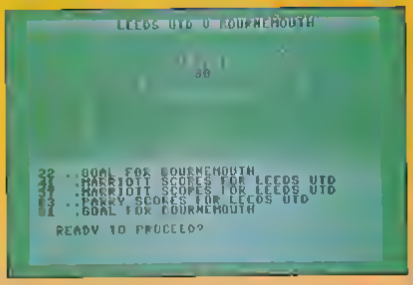
OLYMPIC SPECTACULAR



Eleven Olympic events face keyboard athletes in a rerelease of Database s Micro Olympics that was first released during the Decathlon boom The events are split into three groups running (100 200 400 800 1500 metres) throwing (javelin discus hammer) and jumping (long jump high jump and pole vault)

To play the events you will need a combination of keyboard hammering and timing as you gain speed and jump or throw at the right time and are poorly rewarded for your efforts by jerky basic graphics The running events can be particularly grueling both on fingers and keys as even the 1500m is a sprint!

SOCCER BOSS



Football Games come and go but Football Manager still rules the sidelines but Soccer Boss offers a good alternative and is £1 cheaper

The game lets the new manager of Liverpool Scunthorpe or whatever team you choose to command firmly in the dark with only a few instructions but you'll soon guess the players with the highest skill levels are the ones to pick

As the game proceeds you'll have to grapple with the selection problems injuries and even the gas bill as you strive for league cup and even European glory This game was originally released by Peaksoft but they only had six teams in the league now it's back at a fraction of the cost with full divisions Here we go here we go here we go!

RUN FOR GOLD

Run for Gold is an athletics game in which skill and tactics are as important as your runners speed and stamina You control two runners whose quest is gold in the 400 and 800 1500 metres However there are forty others who want the same medals

You begin your quest in local meetings that will qualify you for a race at Crystal Palace then onto the European Finals and finally the Olympics

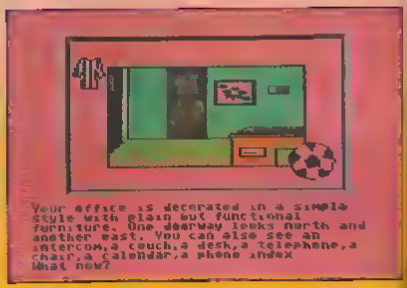
The races are run with you in the centre of the action and you must control your pace and position on the track so that you're well placed for the closing sprint Makes a change from the frantic waggling of the Decathlon games

SCARE BEAR

You are Fred Bear trapped in a nightmare brought on by eating a cheese sandwich Unfortunately this is no ordinary dream as it's a nightmare and is very real You are trapped in a car in toyland and are pursued by fluffy snakes wooden snakes toy trucks turtles joysticks ghosts and a whole host of other toys that have turned nasty and are out to get you

Your only defence against this attack is a nuclear honeypot that delivers a toy trashing honey ball as you leap over your victims in your car that can accelerate break and jump!

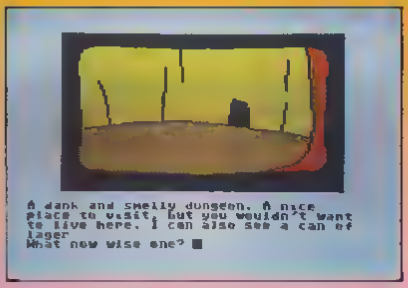
FOOTBALL FRENZY



Football Frenzy is a football game with a difference There are no joystick controlled players that dribble and shoot or tactics to choose as this is an adventure Your team

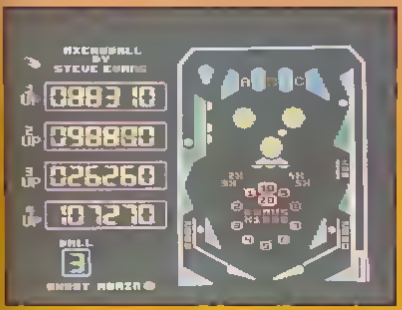
Considering Rangers have [illegible] to end the Cup Final and is [illegible] just three more days before [illegible] the hill [illegible] Surely nothing [illegible] Well [illegible] and its [illegible] £1.99

WIZ BIZ



Here budget adventuring for those who like to talk their way out of trouble. In this game of magic and mayhem you come around after a particularly heavy drinking session in the Duck and Plunger. Half-way during the evening you decided to play a practical piece of turning one of your friends into a black and purple Salamander. When you turned Mike back to normal he was a curious shape and didn't seem to see the funny side but instead planned revenge. Now you find yourself complete with hangover [illegible] in his Castle and the only thing in view is a [illegible]

MICRO BALL



Being a good snooker player is supposed to be a sign of a misspent youth. Unfortunately I chose the less profitable pastime of pinball. As a result I have hit more targets, scored more replays and claimed more extra balls than Steve Davis has potted blacks.

Up to four players can play Micro Ball or more likely you can play four games at once as you attempt to keep the ball in play, knock down sets of targets for bonus multipliers and score the 250 000 points necessary for the first extra ball (480 000 and 720 000 bring second and third extra balls).

As the scores rack up watch out for 'out shots' as a bad bounce can send the ball down one of the side channels before you can get to the tilt button.

Micro Ball occasionally defies the laws of physics as the ball seems to stop in mid air and then carries on once the program has worked out where it's going but for £1.99 pinball wizards will enjoy this.

CRICKET INTERNATIONAL

There have been very few cricket games released for the C64. However fans of the willow and leather can now play 60 over limited over matches between their own teams or in a match between England and the rest of the world.

As bowler runs in he can decide where to bowl the ball and where to pitch leaving the batsman to judge the flight of the ball, decide the angle of the shot and get the bat to the ball. If you hit the ball you can attempt to run between the wickets. The fielding side can then select a fielder to run for the ball and attempt a run out if they haven't already bowled you.

This isn't an easy game to play, so don't expect to score too many centuries, particularly against the computer opponent.

RED ARROWS

Have you what it takes to fly in formation with the world's best display team? Now's your chance to find out as you jump into your Hawk and take to the skies with the elite of the RAF, the Red Arrows.

The game features two parts in which you learn how to fly a Hawk and then fly in formation with the rest of the team. The controls to fly the Hawk can be selected for the keyboard or joystick and include controls for the Hawks thrust and brakes, ailerons and elevators. Once you can keep the plane in the air and on course you're ready to join the rest of the squadron and perform formation manoeuvres such as the Diamond, Pyramid, Eagle and Manhatten. In all these formations you fly a plane at the back of the group so your screen is full of the other planes which can make it difficult to follow.

Touchline

Alternative Software Ltd, Units 3 6 Baileygate Industrial Estate, Pontefract, West Yorkshire, WF8 2LN. *Tel* 0977 797777

Software for Sale

If you think that one of our programs looks very interesting, but you can't afford the time to type it in then our software service will help you out

It's three o'clock in the morning. You sit at the computer keyboard having just finished a marathon typing session entering one of the superb programs from *Your Commodore*. Your fingers reach for the keyboard and press the letters R U and N. You press RETURN sit back and nothing happens.

Everyone has probably faced this problem. When it does happen it's a matter of spending hours searching through the program for any typing mistakes. No matter how long you look or how many people help you you can usually guarantee that at least one little bug slips through unnoticed.

The *Your Commodore* Software Service makes available all of the programs from each issue on both cassette and disk at a price of £6.00 for disk and £4.00 for cassette. None of the documentation for the programs is supplied with the software since it is all available in the relevant magazine. Should you not have the magazine then back issues are available from the following address:

INFONET LTD 5 River Park Estate Berkhamsted, Herts HP4 1HL
TEL (0447) 76661

Please contact this address for prices and availability.

The Disk

Programs on the disk will also be supplied as totally working versions i.e. when possible we will not use Basic Loaders thus making use of the programs much easier. Unfortunately at the moment we cannot duplicate C16 and Plus/4 cassettes. However programs for these machines will be available on the disk.

What programs are available?

At the top of each article you will find a strap containing the article type C64 Program etc. So that you can see which programs are available on which format you will also find a couple of symbols after this strap. The symbols have the following meaning:

This symbol means that the program is available on cassette.

These programs are available on disk.

Please Note

Since the programs supplied on cassette are total working versions of the program we do not put disk-only programs on tape. There is no sense in placing a program that expects to be reading from disk on to tape.

OCTOBER 1987

Shadow Boxing — Use the memory under the C64's ROMS for storage.
Adventure Kit — The first module of our DIY Adventure system (C64)
Sprite Grabber — Grab Sprites from other programs and save them for later use (C64)
Hide it — Program protection for C64 owners

ORDER CODE
DISK YDOCT87 £6.00
TAPE YCOCT87 £4.00

NOVEMBER 1987

ADVENTURE KIT II — The second part of our C64 adventure writing kit
KERNAL II — A pull-down menu system giving easy file handling (C64)
FUNCTION KEY TEMPLATE — Use the Commodore plotter to produce templates on your C64
PLUS/4 AND C16 DISK MENU — Access your disk files with ease (disk only)
128 PREFERENCES — Predefine your computer's default characteristics
NUMBER TUMBLE — A frustrating game for the C64

ORDER CODE
DISK YDNOV87 £6.00
TAPE YCNOV87 £4.00

DECEMBER 1987

DISKIT 8 — A memory clear routine for use with our Turbo Cruncher from March 1987 (Disk only)
DISK MANAGER — Pop-Up disk commands at your fingertips (C64 disk only)

RELOCATOR — Alter the load address of your programs (C64)
8 SPEED SCROLL — Powerful machine code scroll routine (C64)
TYPRO — A Plus/4 text editor (Disk only)
EASY COUNT — A word count facility for Easy Script users
BUDGET CALC — Keep track of your finances (C64 disk only)
SPRITE LIBRARY — The first part of our sprite collection (C64)
LISTER 128 — Produce neat C128 listing with this program (C128 disk only)
TRACK/SECTOR EDITOR — A powerful disk editor (C64 disk only)
DIR COVER — Produce your own detailed disk sleeves (C64 plus disk and printer)
1541 FAST LOADER — Improve your loading time (C64 disk only)
MENU MAKER — A menu generator for C64 owners (Disk only)

ORDER CODE
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TAPE YCDEC87 £4.00

JANUARY 1988

80 CHARACTER PRINTOUT — Give your C64 80 columns
QUESTIONNAIRE 1 — An excellent quiz generator for the C64
ACKROYD'S SAGA — A mathematical educational adventure (C64)
ENLARGING THE 64 — Create large characters on the C64
ARRAY DISPLAY SUBROUTINES — Improve your C64's INPUT routine
C64 TAPE SYSTEM — Provide menu driven access to your C64 cassettes
ORDER CODE
DISK YDJAN88 £6.00
TAPE YCJAN88 £4.00

FEBRUARY 1988

ACKROYD'S SAGA — See January 1988
ULTRA FUNCTION KEYS — Store up to one screen of text on your C64 function keys
INPUT CLEAN UP — Improved INPUT routine for C128 users
ADVENTURE KIT — The parser module for our DIY adventure series
MORSE CODE TUTOR — Teach yourself morse code with this program for the C64
GET THE POINT — A simple joystick driven pointer for C64 users
ORDER CODE
DISK YDFEB88 £6.00
TAPE YCFEB88 £4.00

Cassettes or disks are available from March 1986. Please ring the editorial office (01-437 0626) for details of these.

ORDER FORM – PLEASE COMPLETE IN BLOCK CAPITALS

NAME	QTY	TAPE/DISK	ORDER CODE	PRICE
MARCH '88		TAPE (4.00)	YCMAR88	
MARCH '88		DISK (6.00)	YDMAR88	
OVERSEAS POST £1				
			TOTAL	

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All orders should be sent to YOUR COMMODORE READERS SERVICES ARGUS SPECIALIST PUBLICATIONS 9 HALL ROAD HEMEL HEMPSTEAD HERTS HP2 7BH
Please allow 28 days for delivery

Bone cruncher

Your chance to win one of the hottest games on the market in this month's competition

Superior are now making their mark on the Commodore games market and this month's competition puts your imagination to the test. Guess the names of the characters from Bone Cruncher and a copy of the game could be on its way to you. We are giving away ten games and a personal stereo to the first ten correct entries pulled out of the hat after the closing date.

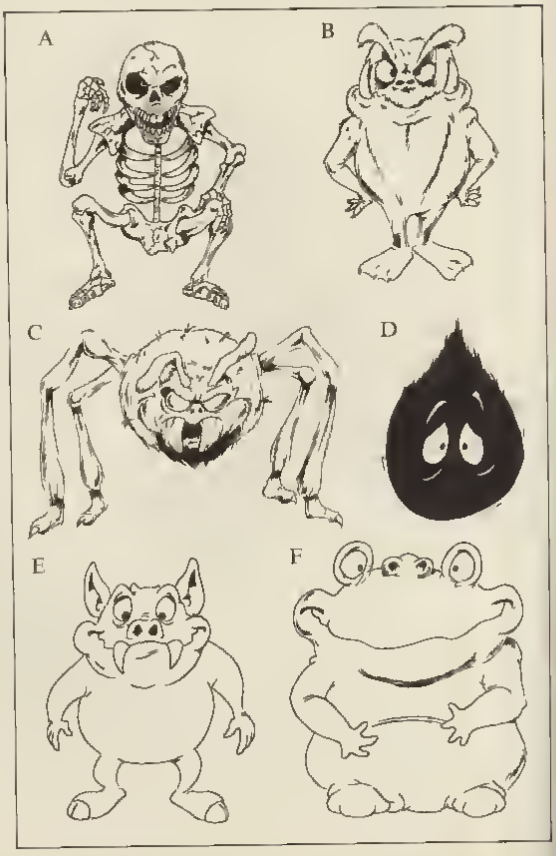
How to Enter

Simply allocate the correct name beside the relevant letter and send your entry to the address on the entry coupon (Hint: our game of the month just happens to be Bone Cruncher!)

The Rules

Entries will not be accepted from employees of Argus Specialist Publications and Superior Software. This restriction also applies to employees' families and agents of the companies.

The How to Enter section forms part of the rules. The Editor's decision is final and no correspondence can be entered into.



Bone Cruncher Competition Entry Coupon

a)
b)
c)
d)
e)
f)

Name

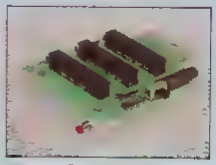
Address

Postcode

Post to *Your Commodore*
Bone Cruncher Competition
1 Golden Square London
W1R 3AB

Closing date
Friday 25th March 1988

DATEL ELECTRONICS



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- Suitable for 64 128
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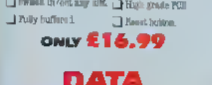

SMART CART ™

Now you can have 8K or 32K cartridge that you program like RAM then acts like ROM!

- 8K or 32K pseudo ROM
- Battery backed to last up to 5 years lithium battery
- Simply load the program you require then turn the switch. The cartridge can then be removed just like a ROM cartridge
- Make your own cartridges including utilities without an EPROM burner.
- Can be switched on or off board via software.
- 1, 0, 2 slot open for special programming techniques
- 32K version has 4 x 8K pages
- Some knowledge of M/C is helpful but full instructions are provided

8K VERSION £14.99
32K VERSION £29.99

SMARTCART UTILITIES

A series of utility programs for use with Smartcart. Simply load in the program and you have a powerful cartridge. When you have a different requirement load in another program into your same cartridge. The process takes seconds so it can be repeated any number of times.

We intend to release a range of programs. The first available are

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- All features of Diskmate II (see ad)

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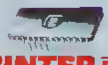

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- Alternative character set ROM. Select in one mode
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- 100% compatible with all software
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- Eclipse
- Mordor
- Future
- Choose any set at the flick of a switch

For anyone who uses their printer often this chip is a must. It's quick and easy to use and the end results are impressive – Your Commodore Jan 87

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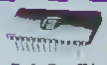

TURBO ROM II

Turbo Rom II is a replacement for the actual kernal inside your 64. It provides superfast load/save routines.

- Loads most programs as if times normal speed
- Saves at 5-6 times normal.
- Improved DOS support including 10 sec format
- Programmable function keys load directory old etc
- Return to normal kernal at flick of a switch
- FORMAT 400 times faster than normal
- FLOAD special I/O loader
- Plus lots more

Fitted in minutes no soldering or solder required (On some 64's the old ROM may have to be considered)

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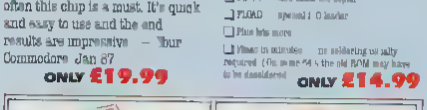

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  - Cut and paste allows unique windows perhaps to be saved to from tape disk
- Blazing Paddles will also work with many other input devices including Inventoria Mouse, graphics tablets, Trackball etc
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Complete Blazing Paddles & Lightpen **ONLY £24.99**

Blazing Paddles available seperately for **£12.99**

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- HEADER GAP EDITOR Decodes and displays ALL header information including off byte header gap. Rewrite the entire header and header gap. Remember sectors that will say no user half gap.
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- ERROR EDIT Quickly find and recreate all read errors including more and 2 consecutive tracks or sectors. Edit half tracks from 0 to 41. Read recreate data on the screen and allows you to redefine any necessary parameters

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RAM DISK

- Turn your 1541 into a 32K RAM disk
- Lack of instant storage area for files/programs
- Load, save, crunch
- Disk type commands, load, save, directory, scratch.
- Program data retained when computer is switched off
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ONLY £9.99

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- The new sampler allows you to record any sound digitally into memory and then replay it with amazing effects.
- Playback forwards/backwards with echo/reverb ring modulation etc.
- Now with full sound editing module for previous outstanding effects.
- Full 8 bit D to A/Sam ADC conversion.
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- Live effects screen includes real time display of waveforms
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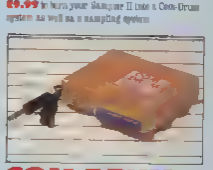
- Load, save sample
- Up to 8 samples in memory at one time
- Tape or disk (please state)
- Complete software/hardware package **£49.99**
- Com Drum software is available separately at **£9.99** to turn your Sampler II into a Com-Drum system as well as a sampling system



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Digital Drum System

- Now you can turn your computer into a digital drum system
- Hardware/software package
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- Complete with 3 drum kits
- Real drum sounds not synthesised.
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including hardware/software/mic etc (State tape or disk)

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- 8 sockets to accept byte x 32K EPROM in each
- On board operating system — no programs to load
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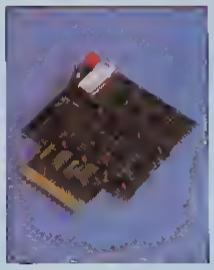

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- Add pokes from magazines etc.
- Fits in cartridge port
- Simply plug in

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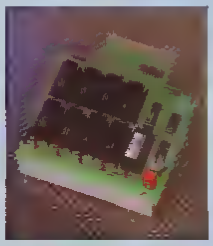

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- A must for clubs, user groups etc. How else can you copy over 250 disks and have for less than £100
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- Fitted in minutes — no [illegible] usually required.

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- The most powerful disk nibbler available anywhere at any price
- Burst Nibbler is actually a two part system — a software package and a parallel interface (which connects to the 1541/1570 1571 or 64 1541 disk drive
- What gives Burst Nibbler the power? Can extract all the data bytes to decode the data from the disk before it can transfer it using the serial bus — when non standard data is encountered they are lost. Burst Nibbler transfers data as raw GCR code via the parallel cable with it the need to decode it so you get a perfect copy. Like original
- Will nibble upto 41 tracks ● Copy a whole disk in under 4 minutes ● Full track display
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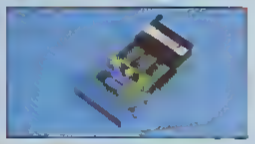

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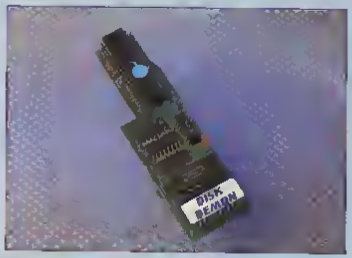

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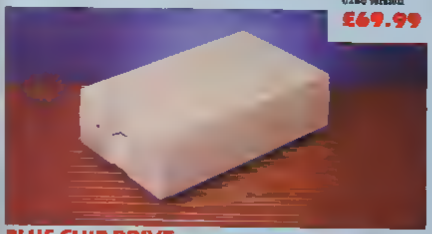

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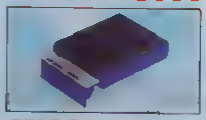

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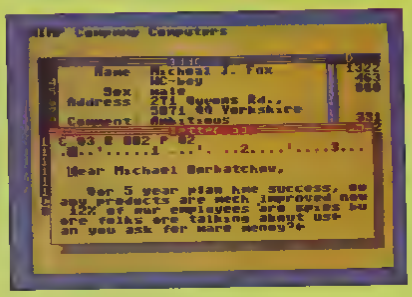
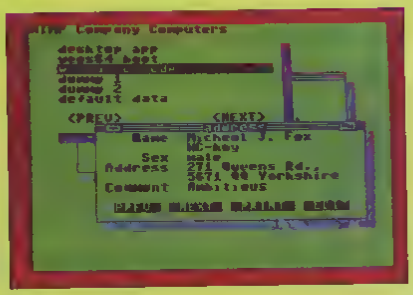
Through the RoundWindowII

We conclude the instructions for WEOS and give you a demo to play with

By Rony van Hae and Bant Duchesne





Pull down menus, windows and joystick driven pointers are no longer difficult for Basic programmers to access with WEOS. Continuing on from last month's mammoth program we give you the remainder of the programming information you need to use WEOS together with a demo program (at the rear of the magazine) which illustrates how to use some of the WEOS commands.

CHECK LIST

- Due to a small programming mistake you can't define a shadow colour. If you specify a comma after the text string, follow it directly by another comma – you have to use a value or a variable instead.

Wrong: MENU 1 , a$, 1 , 2
Right: MENU 1 , a$, 2 , 1

- The position where the window will be printed depends on all the menus which have a lower number. Sounds confusing? Well it isn't, let's imagine the following.

You've got three menus with the following names:

DESK, FILES, OPTIONS, as you can see the headers have a length of 4, 5 and 7 characters. So the first menu starts at 0 (begin position) and the second menu starts at the fifth position and the last menu at the eleventh position. Each menu will be separated with a space as you can see.

Since the print position is calculated by the other menus you'll have to be careful with the x-length of the window. Let's imagine the following: you have already defined six menus and the seventh (which you want to add) starts at position 36 but the length of the window is 16, as you can see this wrong because the sum of xp and xl exceeds 40.

- The x-length of the window also depends on the shadow flag: if this is set to one, you have to add 1 to the x-length. So remember: xl+xp+sh may not be greater than 40.
- Watch out that the length of the names of the options may not exceed the (x-length) 2.
- Sometimes when you define menus and you define different colours you can discover that the inverted option line when you choose an option has two colours!

This is because WEOS will not fill up the remaining gap of characters to solve this problem, fill each option (after the menu text of course) up with spaces. Try this:

```
10 MENU 1,10,2,1,"HEADER—
OPT1—OPT2",5,11,1
20 DESK,94,MENU 1 ON PAUSE 0
```

Run it and go to an option (first turn your pointer on) and click the button. As you will see the inverted line has two colours! To cure this modify line 10 to:

```
10 MENU 1,10,2,1,"HEADER—
OPT1(4 spc)—OPT2(4spc)",4,11,1
```

Run it again. This time it is perfect.

MENU(x) returns menu value
x can be 1 returns selected option
2 returns selected menu e g
10-20 take lines of the first example of menu
30 DESK 94
40 WEOS 2 REM Hunt for symbols & menus
50 IF MENU (0)=0 goto 40
60 SOPEN 10,6 WPRINT MENU ", MENU (0)
70 WPRINT OPT 'MENU (1)
80 PAUSE 0 SCLOSE GOTO 40

Run it Try different menus and options! When you select nothing MENU(0) and MENU (1) will return a null

As mentioned earlier this command gives you the first way to read data when WEOS is performed

● Some people may ask themselves why I added the commands MENU ON and MENU OFF since WEOS 2 does all the work for you Well this is because some people don't have a joystick or a mouse

One final note – if you select a menu it is possible that nothing will happen This is because the computer is too fast To solve this problem try this

POKE 39251 delay (1=very fast 255=very slow)

CHECK
Syntax x=CHECK (a$, asc)
Mode all
Output all
This is a fairly primitive implementation of INSTR CHECK scans the string (a$) for a character (asc) if it is found it will return the place in the string where the character is

This function was added because I didn't include a WINPUT command you can stimulate it with this command Look in our desktop program to find out how we did it

TYPE
Syntax TYPE (x)
Mode all
Output all
This function is the data read function of WEOS
When you perform WEOS it changes a lot of data in your computer to read it out use this command!
TYPE(0) which type of character has collided with the pointer?

0 nothing
1 a special symbol
2 a menu !

If TYPE(0) returns a zero TYPE(1) will return wrong values (so you first have to check TYPE(0))
If TYPE (0) returns a 1 TYPE (1) will return the symbol number
When TYPE(0) returns a 2 TYPE(1) will work the same as the MENU(0) command The special symbols are

Symbol	Value	Poke Code	PETASCII
	1	121 122	185 186
	2	123 124	187 188
	3	93	125
↑	4	30	94
→	5	92	124
↑	6	91	123
←	7	31	95

Symbols 1 and 2 are at both edges of an APW (can be used as CLOSE WINDOW for symbol 1 and MOVE WINDOW for symbol 2) Symbol 3 is used in most cases as OK symbol symbol codes 4 7 are arrow codes which can be used as markers or something different (e g Preference Manager in DeskTop)

● The symbols have no special meaning to the computer but to the user each can have its own meaning and thus you still have to write the routine to perform it

WOPEN
Syntax WOPEN xp yp,xl yl header (wt(sh(st)))
Mode all
Output screen
Yes at last windows This instruction opens a window an APW to be precise When you try to open a window when there is still another window type on screen (SW or PDM) an error is printed this also happens if the limit of opened windows is reached (you can open up to 4 APW)

Let s look at the paras

xp 0-39
yp 0-24
xl 6-40
yl 3-25
sh 0-1

xp yp indicates the cursor position where the window will be printed xl and yl specify the window size and the sh indicates if a shadow is needed (1=yes 0=no) A BAD WINDOW PARAS ERROR can happen if
– the paras are out of range
– the sum of xl+xp+sh exceeds 40
– the sum of yl+yp+sh exceeds 25

They may not contain any control character (such as colour codes or CR) The header string may not be greater than xl-6 and if you want no header simply create an empty string The window cursor is now at (0 0) This is the upper left corner of the window, and also means that the maximum characters allowed on a line before it skips to another line is xl-2

Any screen/window operation is now in this window (except INPUT error messages and disk status reports) e g
WOPEN 2 4 20 10 " "
WOPEN 5 10 10 7 "HELLO"

we se indicate the colour for resp window and shadow Just like the shadow flag those too are optional

WSWAP
Syntax WSWAP
Mode all
Output windows (APW)
This command switches 2 windows it deactivates the first one and activates the window after it All operations are now at the new activated window

● You need at least 2 APWs otherwise you ll get an error e g
10 WOPEN 1 1 20 5 " WOPEN2 3
30 16 WINDOW2
20PAUSE 0 WSWAP WPRINT "Hey
PAUSE 0 WSWAP
30 WPRINT "YES

When there is still another type of window on your screen you will get an error

WCOPY

Syntax WCOPY xp,yp
Mode all
Output screen
This is almost the same as WMOVE with the exception that the system copies the window to another position (thus creating another window. If there are already four windows on screen and you try to WCOPY you ll get an error You can only copy APW

The cursor (window) position in the window will be saved and placed on the other new (identical) window on your screen e g
Add following line to the previous program
40 PAUSE O WCOPY 7 1 PAUSE O WMOVE 5,7 WPRINT YEP
This will demonstrate you what WCOPY really can do!
If a BAD WINDOW PARAS ERROR' occurs see above

SOPEN

Syntax SOPEN xl yl(wc(,shl sc)))
Mode all
Output screen
This command opens a static window (SW) The only difference between APWs and an SW is that they don t need a start position It is calculated automatically for you and centred in the middle of the screen (nice hey??) You simply have to specify the window size When you try to open an SW there is still an PDM or a SW on screen an error is printed However this will not happen if there still is an APW on your screen
The border of a SW is also different (like any different window type) A SW has the highest priority (lowest has a APW and a PDM is among them) Well what does this mean? It means that *you have to close it first by SCLOSE before you can use commands such as wcopy or wswap* And this is the reason why each time you try to open a PDM or APW when there is still a SW on your screen an error is given The last three paras have the same function as by APW and PDM e g
SOPEN 30 10 4 1 WPRINT "THIS WAS THE LAST INSTRUCTION"

WMOVE
Syntax WMOVE xp,yp
Mode all
Output screen
A window manipulation command alters the draw pointer to another position If a bad paras error occurs look at WOPEN for explanation If no window of a wrong type is present on your screen an error report is printed e g
10 WOPEN 2 2,10 6 ' MOVE 2 1,12 PAUSE 0
20 WMOVE 4 7 WPRINT 'MAGIC'
30 PAUSE 0 WMOVE 9,10 WPRINT "HELLO"

Coming Soon

You now have all of the programming information required to put WEOS to use The demonstration program in this issue should make use of the program even easier
In the next instalment, WEOS will provide you with a desktop environment written completely in WEOS BASIC
Should you produce any utilities yourself using WEOS BASIC please send them in
See listings on page 102

Bone Cruncher

[illegible] game this month, this volume — but only if you can master the art of working [illegible]!

by Tony Hetherington

B[illegible]

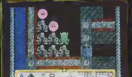
number of soaps by [illegible] delivering them [illegible] way stands [illegible] monsters [illegible]

Mon[illegible] into [illegible] your [illegible]

[illegible]

[illegible]

[illegible]



[illegible]

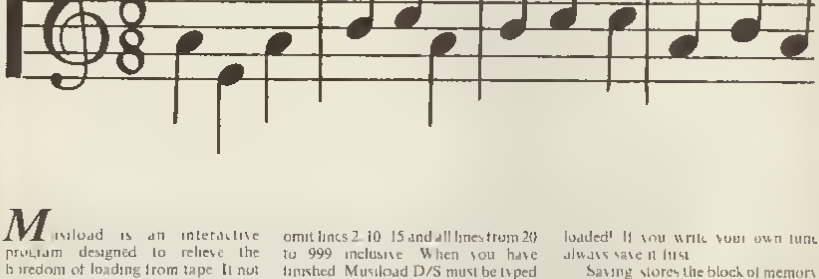
[illegible]

[illegible]

Music While You Load

Loading from tape can be boring. Add a little music and a few effects with Musiload

By P. A. Croton



Musiload is an interactive program designed to relieve the boredom of loading from tape. It not only plays a tune of your own making but also has special joystick controlled features which operate while the program is loading.

The program can be used as an independent loader or as part of a loading chain, using a short program to load and initialise Musiload and then to load the program you actually want to use. While your program loads you can sit back and alter the speed and volume of the music or control the rate at which the border flashes. Almost without realising it your program will have loaded.

Keying In The Program

If you have a copy of the *Your Commodore* HypaBasic program you will be able to enter Assembler Musiload without any alterations. If you haven't got this excellent assembler then you will have to resort to a second method.

Type in Assembler Musiload but omit lines 2-10, 15 and all lines from 20 to 999 inclusive. When you have finished Musiload D/S must be typed in while the modified Assembler Musiload is still in memory. In this way the two programs will be merged into one which can then be saved.

The machine code saver built into the program saves the full Musiload code. Line 8120 defines the name under which this code will be saved as N$="MUSILOAD" but you may change it to suit your needs as long as the new filename is only eight characters in length.

How to use Musiload

When you run Musiload you will have to wait for the code to be read into memory. After this pause you will have the choice of either accepting the preset tune or of writing your own using the Music Editor.

Whatever your choice you will eventually be asked if you want to save the tune or go straight ahead and load your program. If you choose the latter option don't forget that your tune will probably be lost once the program is loaded! If you write your own tune always save it first.

Saving stores the block of memory which contains the working copy of Musiload plus its tune and this can be found between 49152 and 53247 ($C000-$CFFF).

When you load the Musiload code back into the computer it can be set into operation with SYS49152. This starts up the musical interrupt routines and then hands back to the normal C64 mode but with the music playing and the border flashing. Now you type in the usual LOAD command and your program will start to load.

While this is happening you can refer to Table 1 to see the range of controls that your joystick will give you.

To add a more professional effect to your loading you could save the following short loader to load a Basic program.

```
10 PROG=PROG+1
20 IF PROG=1 THEN LOAD
   "musiload",1,1
30 POKE 631,147: POKE 632,82:
POKE 633,85: POKE 634,78: POKE
```

```
635 13 POKE 198 5
40 IF PROG=2 THEN SYS49152
LOAD "filename",1,1
```

The program filenames can be changed to suit your needs

Nomatter which program loading method is chosen you should either type SYS49800 before running your program or make sure that it appears as the first line or else the Musiloud may create strange effects on any sound routines that you use

Using the Music Editor

The Music Editor has six options

ENTER NOTE This allows you to input for each of the three voices of the SID chip in turn The notes are written in the form of note value followed by the octave number C#5 G2

There is no provision for flattened notes so B flat in octave three will appear as G#3

When you have entered three notes a duration common to all of them has to be entered This can have any value from 1-255

ERASE NOTE If a wrong note has been entered it may be erased using this facility Enter the note of the section to be erased and it is removed while all of the other notes are pulled back to fill up the gap

INSERT NOTE Write down the last note number of your tune Then decide which notes the insertion will fall between and type in the lower of the two note numbers This will open up a space in memory for the new notes and places you into the Enter Note option Type in the new values and you will return to the menu

The following step must *always* be followed when an insertion has been made whether you've finished the rest of the tune or not Re-enter the Enter Note option add two to the value you wrote down at the beginning of this option and type it in This will reset the program pointers to the end of your tune If you don't do this you will lose the rest of the tune from the insertion point

If your tune uses all 460 note positions and you try to insert more then the last note will be lost each time you make a new insertion

VIEW NOTES Using this option you can view all of the notes that you have entered from any specified note number NU means that no not has been entered into that position

PLAY NOTES Does just that!

FINISHED Brings you back to the SAVE option

Musiloud does not disturb any of the registers and only uses zero page locations 251 to 254 ($FB-$FE)

Use it to make your programs appear more professional and turn loading time into a pleasure rather than a chore

Table 1

Without Fire Button Pressed

UP autoflash on
DOWN autoflash off
LEFT volume decrease (cyclical)
RIGHT volume increase (cyclical)

With Fire Button Pressed

FIRE flash border
UP increase flash speed
DOWN decrease flash speed
LEFT increase music speed
RIGHT decrease music speed

Plus/4 Assembler

Serious software for Plus/4 users is sadly lacking serious software. We come to the rescue with a superb assembler

By Steve Carrie

The Commodore Plus/4 enjoyed a surge of popularity due to exceptionally low pricing but unfortunately still suffers from an acuate shortage of software compared with its more successful predecessor the Commodore 64. This is certainly true in the area of utilities although to be fair the Plus/4 does come equipped with a pretty good although basic machine language monitor (MLM).

The program I have written is a two-pass symbolic assembler which is disk-based i.e. it reads its source code from a disk file and writes the assembled code to another disk file. The source file is assumed to have an MSDOS type file extension ASM. The runtimt (assembled code) has the extension EXE. For example when the program runs, it asks the user for a filename. If you enter PROG1 and press return, the program will assume that the source file is called PROG1.ASM and will produce a runtimt with the name PROG1.EXE.

The load address of the runtimt is the address given in the assembler directive ORG (code origin). You should therefore ensure that the correct address is given here. The code address defaults to $0000 in the absence of the ORG directive. When assembled the runtimt is loaded by either the MLM 1 command or be a BASIC LOAD with a secondary address of 1.

Given the disk-based nature of the assembler fairly large source code files may be used. The Plus/4 allows about 60K of BASIC. Thus the same amount is available to source code programs since the normal BASIC editor is used to prepare programs.

Getting it all in

The program is presented as a BASIC loader with lots (!) of DATA statements. Each line is checked against the checksum value but it's still a good idea to make use of the *Your Commodore* loader program. Should a problem occur the line where the fault was detected will be printed. Before typing in the program you will have to move the start of BASIC upwards in memory by 4K. Type in the following direct command:

```
POKE 8192,0:POKE 43,1:POKE 44,32:NEW
```

This moves BASIC up to 8192 in memory. If you are typing in the program in stages you must remember to type this in every time before you start.

When the program has been typed in SAVE it first then RUN it. If all is well the program will be built in memory and SAVED to disk.

Reset the machine then load the new program. The assembler has been designed to LOAD and RUN like a BASIC program at the normal BASIC start address ($1001) and will return to BASIC when assembly stops. You are asked for the filename which as mentioned before is assumed to have the file extension ASM. During Pass 1 the assembler will only print something if an error occurs. If this happens then the line in which the error occurred is printed along with an error message.

During Pass 2 a full listing is output to the screen. Any error is shown AFTER the line in which it occurred and assembly stops.

Editing your program could not be simpler. You simply use the Commodore BASIC editor with line numbers as you would for a BASIC program. However there is a catch (things would never be the same without a problem or two !). Normally the Commodore line editor tries to tokenise anything in the input line which looks like a BASIC reserved word. As certain assembly mnemonics contain character sequences which resemble BASIC commands we have to prevent this happening. The program "EDIT" is a small BASIC loader with a machine-code program in DATA statements. When it is loaded and RUN it causes a bypass of the tokenisation routine for program lines only. This means that direct commands such as DLOAD, DSAVE, RENUMBER etc will still work OK but *DON'T TRY TO LIST OR EDIT A BASIC PROGRAM WITH EDIT INSTALLED OTHERWISE YOU'LL GET SOME REALLY WEIRD RESULTS!!!!!!*

Assembler Directives and Formats

There are six assembler directives

BYT Assemble bytes to memory. This directive also allows text to be entered. Typical examples are
10 byt $93 "Hello CBM" $0d,$00
20 byt 23,24 $19,$1a

WOR Assembles 2-byte words to memory. Bytes are arranged in lo-byte hi byte order
10 wor $0071,32768 vector1
20 vector1 wor $3000
This example also shows how symbols may be inserted into WOR and BYT directives

EQZ The eqz directive allows you to associate a symbol with a zero page memory location. When referred to later this symbol will assemble in zero page addressing mode
20 pointer1 eqz $14

EQA The equ directive allows you to associate a symbol with an absolute memory location. When referred to later, this symbol will assemble in absolute addressing mode
40 irqvector equ $0314
50 nmivector equ irqvector+2

RES The RES directive allows an area of memory to be set aside for a table or some such thing. It simply adds the amount specified to the assembly program counter
100 table
110 res 100
120

ORG This directive sets the code origin in memory. Because the disk system uses this to set the program load address it is advisable to use this as the first line of any program
10 org $6000

You may insert comments into a source program using the semi-colon. As you may have noticed above, symbols are declared using a full stop. When referred to later only the name need be given.

Assembly Language Formats

Immediate operands are assumed to be preceeded by the hash (#). Hexadecimal numbers may be prefixed with either the dollar or ampersand ($ &). Asci characters may be inserted into something like LDA # A. This will load the asci code value of the letter A. Decimal numbers have no prefix thus LDA # 30 will assemble to load the accumulator with 30.

As mentioned above symbols must be declared using a full-stop for example

```
10 org $7000
20 lomem=$1001
30 himem=$fe00
40
50 lda #< lomem
60 ldx #< lomem
70 sta himem
80 stx himem+1
90 rts
```

In this example you see that the symbols and may be used to load the lo-order or hi-order byte of an operand respectively. Also you may add or subtract values as in line 80. Note that in a line such as LDA #< memory+ the 'memory+1" is evaluated BEFORE the operator takes effect.

(A Commodore 64 version will appear in a subsequent issue.)

See listings on page 102

LIFESAVERS 7	C64	SPRITES IN BORDER	1/1

There are many games today which include sprites in the border to display scores etc.

The routine presented here will allow you to do just that.

The program sets up an IRQ to check when the screen raster line is at 249. When it has reached this, bit 3 of memory location 53265 is cleared so that 24 row mode is possible. This has the effect of making the bottom border disappear.

The raster will continue to the top so that th top border will also disappear.

When the raster has reached 0, bit 3 of location 53265 is set to 1. This sets up 25 row mode and the screen is displayed as normal.

POKEing various values into memory location 16383 allows you to create some weird effects.

By G Saunders

```
10 REM ************************
20 REM     SPRITES IN BORDER
30 REM ************************
40 BL=4:LN=50:SA=49152
50 FOR L=0 TO BL:CX=0:FOR D=0 T
O 15:READ A:CX=CX+A:POKE SA+L*1
6+D,A:NEXT D
60 READ A:IF A><CX THENPRINT ER
ROR IN LINE";LN+(L*10):STOP
70 NEXT L:END
80 DATA 120,162,33,160,192,142,
20,3,140,21,3,162,1,142,13,220:
1534
90 DATA 142,26,208,202,142,18,2
08,173,17,208,41,247,141,17,208
,88,2086
100 DATA 96,162,1,142,25,208,17
3,18,208,201,249,176,16,173,17,
208,2073
110 DATA 9,8,141,17,208,169,249
,141,18,208,76,129,234,173,17,2
08,2005
120 DATA 41,247,141,17,208,169,
0,141,18,208,76,49,234,0,0,0,15
49
130 SYS 49152:REM START PROG.
```

The Choice of Modem

There are a number of factors to be taken into consideration when entering the world of communications. Here we look at two modems at opposite ends of the price scale

By David Janda

The modems we will be looking at are the Kirk Enterprise 1 and the Pace Series Four 1200S. Before describing each modem in turn it's worth pointing out the hardware/software that is used with these modems as neither one was specifically designed for use with the Commodore 64/128.

Kirk recommended the Mustang 64 Communications Cartridge (V2.1) from Y2 Computing for use with the Enterprise 1 modem. This item plugs into the cartridge port and offers viewdata and scrolling terminal facilities. However because the Enterprise 1 is equipped with a female 25 way D type RS232 connector it is not essential that the modem be used with the Y2 software.

Indeed to test the 1200 baud half duplex capability of the Enterprise 1 I interfaced the modem to the 64 via an RS232 interface which plugs into the user port of the 64/128. The software used with the interface was HomeTerm which is part of the HomePack integrated suite of software from Ariolasoft.

Basically the same applies with the Series Four. It too is equipped with a female RS232 connector and can be used with the Y2 cartridge or connected to the 64/128 via an RS232 interface. For the purpose of this review the Series Four 1200S was tested with both the Y2 software as well as HomeTerm.

Commodore Connection

This choice of connecting a modem to the 64/128 is a little confusing and deserves further explanation. Cartridge software is very popular in this country and because the major control lines are supported on the cartridge port manufacturers have opted to put their comms software and interfacing electronics into one package – a cartridge. The Y2 Mustang software is one example, however the cartridge in turn must be connected to a modem.

The next stage from this is to incorporate a modem into the package as well examples are the Commodore modem and the Multi-modem from Miracle Technology.

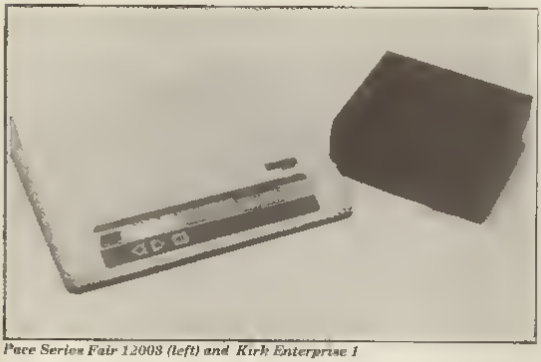
The alternative is to connect the modem to the 64/128 via the user port. To do this the user must purchase an RS232 interface (which costs as little as £30). Terminal software will be required to drive the RS232 interface but this should not be a problem as there are dozens of terminal programs in the public domain. One example is *Your Commodore's* very own Telecom 64 which was listed in the April 1986 issue. Connecting a modem via this method has the advantage that the RS232 interface can be used to drive devices other than a modem a printer or plotter for example. The main disadvantage is that there is no viewdata software (that I know of) which operates through the user port.

Enterprise 1

Probably the best way to describe the Enterprise 1 is to say that it is a Voyager 7 with bits added on. The appearance and functionality are almost identical and perhaps this is not so surprising as both the Enterprise 1 and the Voyager 7 were manufactured by Kirk International.

Appearance wise the Enterprise 1 is housed in a black casing with green lettering on the front panel. A rotary switch on the right is used to select the required baud rate which can be one of 300/300, org/ans, 1200/1200 half duplex, 1200/75, 75/1200 baud and test. A feature which is not on the Voyager 7 is the on/off line button which is used when dialing/answering manually. An interesting oddity is that pushing the button in will switch the modem offline and out online. The other way round would have been more logical in my opinion.

At the rear of the modem is the RS232 socket (female), phone socket, telephone lead and power cable. Of particular interest is the 21 pin RS232 connector. Looking inside the modem reveals that pins 1-6, 15, 17, 20, 22, 23 and 25 are in use. Basically this means that connecting the Enterprise to your



Pace Series Fair 1200S (left) and Kirk Enterprise 1

Commodore should be no problem as a variety of options are available. The phone socket is recessed and allows a telephone to be used in-line with the modem which saves you the expense of buying a splitter.

Using the Enterprise I proved to be simplicity itself, even though the manual is quite grotty. When used with software such as Mustang from Y2 Computing the auto-dial feature can be used. The Enterprise series uses boring old relay technology to auto-dial, which is quite loud in operation and not the most reliable method of getting a telephone to dial, but what can you expect for the price?

One aspect of the operation of Enterprise I that particularly annoyed me was the so-called auto-answer facility which, more often than not, did not work. I have had this problem with several Voyager 7s, and I can only conclude that the problem is inherent in the design of the modem.

Having said this, all other aspects of the modems operation were fine and I would conclude that if you are looking for a cheap (but mostly reliable) modem with dual speed operation it would be a good idea to shop around for an Enterprise I.

Series Four Range

The Series Four range of modems from Pace Micro Technology consists of three models, and I looked at the 1200S, which is in the 'middle' of the range.

What you get for the price (and the price is quite a lot) is sophistication with simplicity. Let me explain. The Series Four is one of the new breed of intelligent modems. That is, a lot of the work that is normally done by the micro/RS232 interface/software is done by the modem itself. The modem has its own control program and central processing unit and is in effect a computer in its own right. Operation of the modem is done by sending it commands from the terminal software. These commands were developed by the Hayes company and are widely used throughout the industry.

The 1200S model reviewed can operate at 300/300, 1200/75, 75/1200 and 1200/1200 full-duplex. It features auto dial, auto answer, auto baud rate detection/selection. Also included is a battery backed clock/calandar and the facility to store up to 64 phone numbers in its internal note@ad memory which is battery backed. The 1200S also features a full RS232 port with inline phone socket as well as a Centronics printer port and 20 segment led display with line strength indicator and speed buffering.

The modem itself is quite flat but takes up a large footprint on our work surface. The front panel consists of an LCD display with two touch-sensitive buttons (that are used to manually select options) and the line status/line strength LEDs. At the rear of the modem is the power supply socket (or the PSU which is a separate unit), the inline phone socket, the Centronics port and the only button on the whole machine, the reset switch.

Interfacing the 1200S to your Commodore is also very easy. However, because the modem is intelligent, it can be used with practically any comms software you care to name.

Simple Operation

Once connected to your micro the 1200S is easy to operate. Due to the way the modem is wired up to the micro the comms software (such as Mustang) will think that the modem is online and go into terminal mode after a few seconds. The reason for this is that the commands to operate the modem are entered from your keyboard while *in* terminal mode. To understand this better consider the following example: using the Mustang cartridge connected to the Series Four I would like to contact Telecom Gold at 1200 baud full duplex. I would select the terminal mode and go online by pressing return (even though I was not online). At this stage I would be greeted with a blank screen, but by entering AT? followed by RETURN the Series Four help

Table 1 – ENTERPRISE I RS232 PIN OUTS

Pin No	Function	Circuits
1		Data Ground
2	BA	Transmit Data
3	BB	Receive Data
4	CA	RTS
5	CB	CTS
6	CC	DSR
15	DB	Transmit Baud Clock
17	DD	Receive Baud Clock
20	CD	DTR
22	CE	Ring Detect
24		Data Direction
25		Charger

screen would be displayed (Table 2). To enter Telecom Gold at 1200 full-duplex I would simply enter the following

ATD 583 1200

The rest would be automatic with the modem dialing detecting the answer selecting the appropriate baud rate and so on. Even if my terminal software can only operate at 300/300 baud it is still possible to use services that operate at 1200 baud full-duplex because the Series Four has an internal memory buffer that keeps things in order. The final result is that the modem is very easy to use and yet extremely powerful. Without a doubt the Series Four is the Rolls-Royce among modems.

Touchline

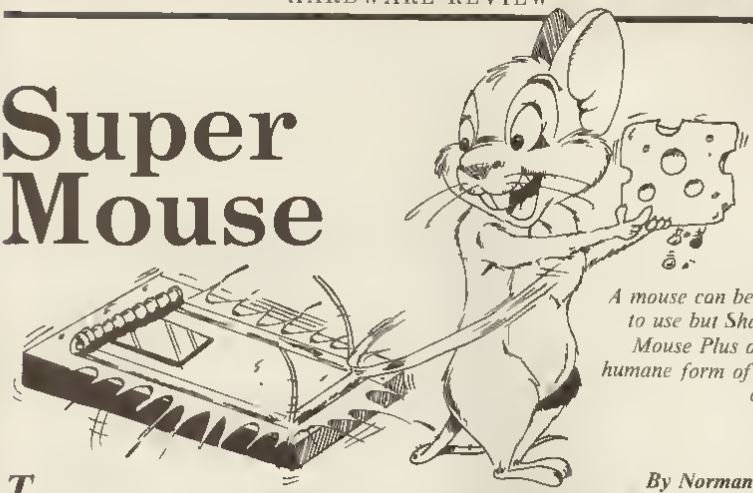
Product *Kirk Enterprise I* ***Supplier*** *Dataphone Ltd 22 Alfric Square Woodston Peterborough PE2 0JP* ***Tel*** *0733 23024* ***Price*** *£99.95*

Product *Pace Series Four 1200S* ***Supplier*** *Pace 92 New Cross Street Bradford BD5 8BS* ***Tel*** *0274 488211* ***Price*** *£399*

TABLE 2 – SERIES FOUR

	AT Command Set
A	Answer call without delay
C	Carrier control C0=OFF, C1=ON
D	Dial number and originate call
E	Echo commands E0=OFF E1=ON
F	Echo data F0=ON F1=OFF
H	Hook control H0=ON H1=OFF
I	Display Identity In (n=0 1 2)
K	Display/set time/date Kn (n=0 1 2)
L	Speaker Loudness Ln (n=1,2 3)
M	Monitor status Mn (n=0 1,2)
N	Display/set number store
O	Go back On-line
P	Pulse dialling ON
Q	Result codes Q0=ON Q1=OFF
R	Reverse to answer after dialling
S	Display/set S registers
T	Tone dialling On
U	Unattended mode U0=OFF U1=ON
V	Result codes V0=Numeric V1=English
W	Wait for secondary dial tone
X	Extended Result code (n=0 1 2 3 4)
Z	Resets S Registers/Commands

Super Mouse



A mouse can be a pest to use but Shazaan's Mouse Plus offers a humane form of rodent control

By Norman Doyle

The Neos Mouse and Cheese package forms part of the bait to lure prospective buyers into acquiring the Commodore 64C package. As with any mousetrap there is a catch - once the mouse is plugged in the keyboard responds in a most peculiar way. In the real world mice are rarely noticed and it would be good if their electronic counterparts acted in a similar way.

With the Mouse Plus Shazaan Systems offers a means of fulfilling this dream by providing a connector and associated software which allows the mouse to be attached to the user port instead of the joystick port. Connected in this way the software can then set up the necessary interrupts to allow the keyboard and mouse to be used in unison.

What's on the Disk

The disk provided with the adaptor/connector contains five programs which adequately demonstrate the power of the module. The first program offers an Amiga style set of pull-down menus, two of the others demonstrate the use of the mouse and a fourth is a program which can be incorporated in the user's own software.

The final program on the disk is a Cheese modifier which unfortunately only appears to work in conjunction with the disk version of the original program. The 64C package incorporates the cassette version of this mouse-driven drawing program. After transferring the cassette version to disk I attempted to incorporate the modifier but found it to be a fruitless experiment. The Newcheese program generated would not operate at all so I would like to see a cassette modifier included in future.

To return to the Amiga-style menu program, the master menu names are displayed across the top line of the display screen. By clicking onto one of these headings various useful utility programs can be called from the revealed pull-down menus.

Disk commands such as errors and directory display, scratch, rename, initialise, validate, load (machine code or Basic) and save can be selected without the need to resort to the usual complex Basic commands. Clicking onto an option often results in an action window opening at the centre of the screen so that specific program details can be entered. When the operation has been completed the original screen is restored.

The printer options gives a screen dump. Basic program printout and reset options. Utilities allows the recovery of a 'newed' program and the appending or merging of two programs. Border, screen, cursor or mouse pointer colours can be changed via the special menus option and the final menu simply displays the version date of the menu program in use.

The instructions give full details on how this rudimentary selection of utilities can be expanded with your own programs. This means that if a renumber utility is considered essential to your programming needs you can patch it into the menu system and then save the whole new program to disk.

Colour Change

One of the first utilities that I would like to add to this system is an option to change the colour of the menu tabs. These are displayed in dark blue so, if this is also your favoured background colour, the menu becomes invisible until you move the pointer onto one of the options.

The two mouse programs, Mouse1 and its associated demo, graphically display the way in which the system can be used to great effect in your own software and there is a separate program, Mouse2, which has been created for your own use.

The Mouse Plus package certainly offers vastly improved and much needed control systems for the Neos Mouse and turns a novelty into a practical device which will enhance your software. Such value does not come cheaply but for £19.95 you not only get the disk and the connector but also the freedom to leave your mouse permanently connected and ready for use with suitable software.

Touchline

Product *The Mouse Plus* ***Supplier*** *Shazaan Systems, 8 Alm Close, Knap Hill, Woking, Surrey GU21 2BP* ***Tel*** *04867 89098* ***Price*** *£19.95* ***Extras.*** *disk drive, Neos Mouse*

Listings

Get it right first time with our deluxe program system for the C64

You may have noticed that our listings are free of those horrible little black blobs which send you searching around the keyboard for a suitable graphic symbol You may also have noticed the funny numbers by the side of each line of the listing Fret no more, it's all part of our easy entry aid

Instead of those nasty graphics and rows of countless spaces in PRINT statements and strings we use a special coding system The code or mnemonic is always contained in square brackets and you ll soon learn to decipher their meanings

For example, [S A] would mean type in a Shifted A or an ace of spades in layman's terms and [SA10] would mean a row of ten of these symbols

[S+2] means hold down the shift key and press the plus key twice It doesn t take a great leap of logic to realise that [C+2] means exactly the same thing except that the Commodore key (bottom left of the keyboard) is held down instead of the shift key

If more than two spaces appear in a statement then this will be printed as [SPC4] or, exceptionally- [SSPC4]. Translated into English this means press the spacebar four times or in the latter case hold the shift key down while you do it

A string of special characters could appear as

[CTRL N, DOWN2 LEFT5 BLUE F3 C3]

This would be achieved by holding down the CTRL key as you press N, press the cursor key down twice the cursor left key five times press the key marked BLUE while holding down the CTRL key press the F3 key and finally hold the Commodore key down while pressing the number two key (C2 would of course make the computer print in brown)

Always remember that you should only have a row of graphics characters on your screen with no square brackets and no commas unless something like this appears

[SS] [C*]

In this case the two characters should have a comma between them

On rare occasions [REV T] will appear in a listing This is a delete symbol and is created by entering the line up to this mnemonic Then type a closing quotation mark (SHIFT & 2) and delete it This gets the computer out of quotes mode Hold down CTRL and press the number nine key (RVSON) type the relevant number of reversed T's and then hold down CTRL and press zero (RVSOFF) Next type another quotation mark and delete it again Now finish the line and press RETURN

A list of these special cases is given in the table but remember that only one of these mnemonics will appear outside of a PRINT string the symbol for pi This may appear when its value is needed in a calculation so this may look something like

CC=2*[PI]*R

Ignore the square brackets and just type in a shifted upward pointing arrow (ie the pi symbol)

```
PROGRAM: SYNTAX CHECKER

5 REM SYTAX CHECKER - ERIC DOYLE

10 BL=10    LN=70    SA=49152
20 FOR L=0 TO BL:CX=0 FOR O=0 TO
 15
30 READ A IF A>255THENPRINT"NUMB
ER TO LARGE" LN+(L*10) STOP
40 CX=CX+A POKE SA+L*16+O A:NEXT
 O
50 READ A IF A<>CX THENPRINT"ERR
OR IN LINE" LN+(L*10) STOP
60 NEXT L SYS 49152 NEW
70 DATA 173 5 3 201 165 208 31 1
20 169 5 141 32 208 141 33 208 1
847
80 DATA 169 7 141 134 2 169 13 3
2 210 255 169 54 141 4 3 169 128
2
90 DATA 132 141 5 3 96 56 120 15
9 124 141 4 3 169 165 141 5 1566

100 DATA 3 169 14 141 134 2 141
32 208 169 8 141 33 208 88 56 15
85
110 DATA 32 124 165 72 138 72 15
2 72 162 0 166,20,133 254 165 21
1747
120 DATA 24 101 254 133 254 169
0 2 240 18 69,254 133 254 232 18
9 2246
130 DATA 0 2 240 8 24 101 254 13
3 254 232 208 233 169 1 141 134
2134
140 DATA 2 165 254 74 74 74 74 3
2 156 152 32 210 255 165 254,41
2064
150 DATA 15 32 156 152 32 210,25
5 169 13 32 210 255 169 13 32 21
0 1336
160 DATA 255 169 7 141 134 2 104
 169 104 170 104 96 24 105 48 20
1 1832
170 DATA 58 144 1 96 24 105 7 96
0 0 0 0 0 0 0 0 403
```

by Eric Doyle

Checksum Program

The hexadecimal numbers appearing in a column to the left of the listing should not be typed in with the program. These are merely checksum values and are there to help you get each line right. Don't worry if you don't understand the hexadecimal system, as long as you can compare two characters on the screen with the corresponding two characters in the magazine you can use our line checking program.

Type in the Checksum Program, make sure that you've not made any mistakes and save it to tape or disk immediately because it will be used with most of the present and future listings appearing in Your Commodore.

At the start of each programming session, load Checksum and run it. The screen will turn brown with yellow characters and each time you type in a line and press the RETURN key a number will appear on the screen in white. This should be the same as the corresponding value in the magazine.

If the two values don't relate to one another you have not copied the line exactly as printed so go back and check each character carefully. When you find the error simply correct it and press RETURN again.

If you want to turn off the checksum simply type SYS49152 and the screen will return to the familiar blue colours. You can then do whatever it was you wanted to do and if this doesn't use the area where Checksum lies you can go back to it with the same SYS command.

Lower Case

Many of the listings are presented in lower case. To turn your computer to lower case mode press the Commodore key and the SHIFT key at the same time.

Mnemonic	Symbol	Keypress
[RIGHT]		CRSR left/right
[LEFT]		SHIFT & CRSR left/right
[DOWN]		CRSR up/down
[UP]		SHIFT & CRSR up/down
[F1]		f1 key
[F2]		SHIFT & f1 key
[F3]		f3 key
[F4]		SHIFT & f3 key
[F5]		f5 key
[F6]		SHIFT & f5 key
[F7]		f7 key
[F8]		SHIFT & f7 key
[HOME]		CLR/HOME
[CLR]		SHIFT & CLR/HOME
[RVSON]		CTRL & 9
[RVSOFF]		CTRL & 0

Mnemonic	Symbol	Keypress
[BLACK]		CTRL & 1
[WHITE]		CTRL & 2
[RED]		CTRL & 3
[CYAN]		CTRL & 4
[PURPLE]		CTRL & 5
[GREEN]		CTRL & 6
[BLUE]		CTRL & 7
[YELLOW]		CTRL & 8
[POUND]		£
[LARROW]		—
[UPARROW]		↑
[PI]		SHIFT & ↑
[INST]		SHIFT & INST/DEL
[REVT]		see text
[Cletter]		CBM + letter
[Sletter]		SHIFT + letter

Listings

Multi Dump

Program 1

```
10 REM MULTI-DUMP M/C LOADER
20 REM D.G.WILKINSON 1987
30 BL=37    :LN=90    :SA=52640
40 FOR L=0 TO BL:CX=0:FOR D=0 TO 15
50 READ A:IF A>255THENPRINT"NUMBER[sp]TO[sp]LARGE";LN+(L*10):STOP
60 CX=CX+A:POKE SA+L*16+D,A:NEXT D
70 READ A:IF A<>CX THENPRINT"ERROR[sp]IN[sp]LINE";LN+(L*10):STOP
80 NEXT L:END
90 DATA 0,0,0,0,0,0,195,68,71,87,49,57,56,55,27,51,716
100 DATA 23,27,42,1,192,3,120,169,193,141,20,3,169,207,141,21,1472
110 DATA 3,88,96,27,51,23,27,42,4,64,1,32,239,205,169,25,1096
120 DATA 141,129,206,173,255,207,240,8,32,34,206,76,227,205,27,50,2221
130 DATA 32,67,206,206,129,206,208,235,32,115,206,76,199,207,173,169,2466
140 DATA 255,141,3,221,173,213,206,240,14,173,253,207,133,254,173,34,2697
150 DATA 206,133,255,76,17,206,20,173,254,207,133,254,173,66,206,133,2512
160 DATA 255,169,128,141,156,206,173,255,207,203,5,169,192,141,156,206,2767
170 DATA 169,13,32,165,207,96,4,169,7,141,91,207,169,0,141,132,1743
180 DATA 207,174,6,206,240,8,169,32,32,165,207,202,208,248,32,157,2293
190 DATA 206,96,32,165,254,141,51,207,165,255,141,71,207,169,3,141,2304
200 DATA 91,207,169,0,141,132,207,32,157,206,173,51,207,133,254,173,2333
210 DATA 71,207,133,255,169,7,141,91,207,169,4,141,132,207,32,157,2123
220 DATA 206,96,208,162,0,189,222,205,32,165,207,232,224,2,208,245,2603
230 DATA 96,173,162,0,173,255,207,208,7,189,174,205,76,147,206,173,2451
240 DATA 109,195,205,32,165,207,232,224,8,208,233,96,173,169,40,141,2517
250 DATA 143,206,32,130,206,173,213,206,240,3,32,214,206,32,3,207,2246
260 DATA 32,133,207,24,173,213,206,208,2,169,8,101,254,133,254,165,2232
270 DATA 255,105,0,133,255,206,143,206,208,219,169,13,32,165,207,169,2485
280 DATA 10,32,165,207,96,173,160,0,177,254,133,252,132,253,24,6,2074
290 DATA 252,38,253,6,252,38,253,6,252,38,253,24,165,253,109,114,2306
300 DATA 206,133,253,173,24,208,41,2,240,7,165,252,24,105,8,133,1975
310 DATA 253,96,173,172,91,207,140,164,207,162,0,169,0,157,166,205,2362
320 DATA 232,224,8,208,248,173,213,206,240,7,32,32,207,76,36,207,2349
330 DATA 173,32,72,207,32,92,207,206,164,207,172,164,207,204,132,207,2478
340 DATA 16,227,96,173,165,1,141,32,207,41,251,133,1,177,252,72,1985
350 DATA 173,32,207,133,1,104,96,173,165,1,141,32,207,37,252,133,1887
360 DATA 1,177,254,72,173,32,207,133,1,104,96,173,162,0,10,72,1467
370 DATA 160,0,144,3,172,156,206,152,29,166,205,172,164,207,204,132,2272
380 DATA 207,240,7,172,255,207,208,1,74,74,157,166,205,104,232,224,2533
390 DATA 8,144,219,96,173,162,0,189,166,205,32,165,207,173,255,207,2401
400 DATA 209,12,189,166,205,32,165,207,189,166,205,32,165,207,232,224,2604
410 DATA 8,144,228,96,173,141,1,221,173,0,221,41,251,141,0,221,2060
420 DATA 169,16,44,13,221,240,251,173,0,221,9,4,141,0,221,96,1819
430 DATA 173,165,197,201,64,208,4,76,49,234,173,201,4,208,7,160,2124
440 DATA 1,162,0,240,31,173,201,5,208,7,160,0,162,0,240,20,1610
450 DATA 173,201,6,208,7,160,1,162,1,208,9,173,201,3,208,215,1936
460 DATA 160,0,162,1,140,255,207,142,213,206,76,203,205,0,0,0,1970
```

Program 2

```
10 REM MULTIDUMP BY D.G.WILKINSON
20 REM COPYRIGHT OCTOBER 1987
40 POKE53280,2:POKE53281,5
50 PRINT"[cl,dn,ct1,sp*13,rv*]MULTI-DUMP"
60 PRINT"[ct1,sp*6]PRINTS[sp]HIRES[sp]A[sp]CHAR[sp]SCREENS
70 PRINT"[sp*7]ON[sp]CANON[sp]&[sp]EPSON[sp]PRINTERS"
80 PRINT"[sp*4]USING[sp]PARALLEL[sp]I/F[sp]IN[sp]USER[sp]PORT"
90 PRINT"[sp*4]COPYRIGHT[sp]D.G.WILKINSON[sp]OCT[sp]1987"
130 Z2=32
140 PRINT"[dn]HIRES[sp]SCREEN[sp]ADDR=8192($2000)[sp]OK?[sp]Y/N[sp]"
150 GOSUB 720
```

```
160 IF YN=1GOTO190
170 GOSUB770
180 IFYN=1GOTO170
190 POKE52[illegible],Z2
200 Z2=4
210 PRINT"[dn]CHAR[sp]SCREEN[sp]ADDR=1024($0400)[sp]OK?[sp]Y/N[sp]";
220 GOSUB720
230 IFYN=1GOTO[illegible]
240 GOSUB770
250 IF YN=1GOTO240
260 POKE52774,Z2
270 Z2=200:Z3=251
280 PRINT"[dn]STANDARD[sp]CHAR.[sp]SET[sp]OK?[sp]Y/N[sp]";
290 GOSUB720
300 IFYN=1GOTO370
310 Z3=252
320 PRINT"[dn]CHAR[sp]RAM[sp]ADDR=53248($D000)[sp]OK?[sp]Y/N[sp]";
330 GOSUB720
340 IFYN=1GOTO370
350 GOSUB770
360 IFYN=1GOTO350
370 POKE52850,Z2:POKE53050,Z3
380 N1=20
390 PRINT"[dn]SPACES[sp]BEFORE[sp]START[sp]OF[sp]SMALL"
400 PRINT'[sp]PICTURE[sp]=[sp]20[sp*2]OK?[sp]Y/N[sp]";
410 GOSUB720
420 IFYN=1GOTO460
430 PRINT'GIVE[sp]NO.[sp]OF[sp]SPACES[sp](0-40)[sp]';
440 GOSUB1070
450 IF YN=1 OR N1<0 OR N1>40 THENPRINT"[ctE,sp*2]BAD[sp]INPUT[sp]TRY[sp]AGAIN'[c
t1]":GOTO430
460 POKE52742,N1
470 N1=23
480 PRINT'[dn]NAPROW[sp]LINE[sp]FEED[sp]OK?[sp]Y/N[sp]';
490 GOSUB720
500 IFYN=1GOTO530
510 PRINT"PAPER[sp]FEED[sp]NOW[sp]SET[sp]TO[sp]24/216"
520 N1=24
530 POKE52656,N1:POKE52677,N1
540 N1=169
550 PRINT"[dn]LINE[sp]FEED[sp]REQUIRED?[sp]Y/N[sp]";
560 GOSUB720
570 IFYN=1GOTO590
580 N1=96
590 POKE52943,N1
600 SYS52662
610 PRINT"[ct,dn,ct1,sp*13,rv+]MULTI-DUMP"
620 PRINT'[dn,sp*7]MULTI-DUMP[sp]NOW[sp]ACTIVATED"
630 PRINT'[dn*2,sp*3]PRESS:'
640 PRINT"[dn,sp*3]KEY[sp]F1[sp]FOR[sp]SMALL[sp]HI-RES[sp]PRINT"
650 PRINT"[dn,sp*3]KEY[sp]F3[sp]FOR[sp]LARGE[sp]HI-RES[sp]PRINT'
660 PRINT"[dn,sp*3]KEY[sp]F5[sp]FOR[sp]SMALL[sp]CHAR[sp]SCREEN[sp]PRINT"
670 PRINT"[dn,sp*3]KEY[sp]F7[sp]FOR[sp]LARGE[sp]CHAR[sp]SCREEN[sp]PRINT"
680 PRINT"[dn*2]NOTE:[sp]IT[sp]MAY[sp]BE[sp]NECESSARY[sp]TO[sp]TOGGLE'
690 PRINT'[sp*6]THE[sp]PRINTER[sp]'ON-LINE'[sp]SWITCH"
700 PRINT"[sp*6]TO[sp]START[sp]PRINTING.
710 END
720 YN=0
730 GETA$:IF A$="":GOTO720
740 IF A$="Y"THENYN=1:PRINT"[ct8]Y[ct1]":RETURN
750 IF A$<>"N"GOTO730
760 PRINT"[ct8]N[ct1]":RETURN
770 YN=0
780 PRINT"[ct1,sp]GIVE[sp]NEW[sp]ADDRESS[sp]-[sp,ct7]";:Z$=""
790 GET A$:IF A$="" GOTO 790
800 IF A$=CHR$(13) GOTO 820
810 PRINTA$;:Z$=Z$+A$:GOTO790
820 PRINT"[ct1]"
830 IF LEFT$(Z$,1)="$" THEN GOSUB 940:RETURN
840 IF YN<>2 GOTO870
```

```
850 PRINT"[ct8,sp*2]BAD[sp]HEX[sp]NUMBER[sp] [<p]TRY[<p]AGAIN'
860 GOTO900
870 Z1=VAL(Z$)
880 IF Z1>65535GOTO910
890 PRINT'[ct6]TOO[<p]BIG,[sp]TRY[sp]AGAIN[ct1]'
900 YN=1:RETURN
910 Z2=INT(Z1/256)
920 Z3=Z1-Z2*256
930 RETURN
940 Z$=RIGHT$(Z$,LEN(Z$)-1)
950 IF LEN(Z$)>4 THEN YN=2:RETURN
960 Z2=0:Z3=0
970 FORI=4TO1STEP-1
980 Z1=ASC(MID$(Z$,I,1))-48
990 IF Z1<0 OR Z1>22 THENYN=2:GOTO 1030
1000 IF Z1>9 THEN Z1=Z1-7
1010 IF I=4THENZ3=Z1
1020 IF I=3THENZ3=Z3+16*Z1
1030 IF I=2THENZ2=Z1
1040 IF I=1THENZ2=Z2+16*Z1
1050 NEXTI
1060 RETURN
1070 A$="":YN=0
1080 GETZ$:IFZ$=""GOTO1080
1090 IFZ$=CHR$(13)GOTO1120
1100 PRINT [ct8]'Z$;
1110 A$=A$+Z$:GOTO1080
1120 PRINT"[ct1]":IFLEN(A$)=0THENYN=1:RETURN
1130 N1=VAL(A$):RETURN
```

Music While You Load

Getting it all in

The program is presented here as a simple Basic loader Type it in using our SYNTAX CHECKER, see LISTINGS

When RUN the program will POKE the machine code for MUSILOAD into memory and enter the editor
You can then generate your own music and save it to tape or disk

NB Instructions for entering the program have been modified since the text for this item was produced Ignore the entry instructions in the article

```
PROGRAM MUSILOAD
```

```
SC  0 CLR
D5  1 DIMA$(100),A(100)
24  3 PRINT CCLR]PLEASE WAIT
24  5 LN=58:RESTORE
CD  10 FORI=4815210498325TEP10
11  15 LN=LN+10 C=0
2A  20 FORJ=1TO1+9
8F  30 READA C=C+A
56  40 POKEJ,A
06  50 NEXTJ:READA
99  60 IFA<>CIHENPRINT'ERROR IN LINE ' LN END
8D  70 NEXTI
58  80 GOTO1200
1E  100 DATA 120, 169, 112, 141, 40, 3, 169 162, 141, 41, 1 120
5A  110 DATA 3, 169 0, 133 251 , 169, 195 133, 252 169, 1 474
5E  120 DATA 80, 133 253, 169, 0, 162, 0, 157 0 212, 1166
44  130 DATA 232, 224, 24, 208, 248, 169, 15 141 24, 212, 1457
9E  140 DATA 169, 9, 141 5, 212 , 141, 12 212, 141, 19, 106 1
DF  150 DATA 212, 169, 1, 141 2 36, 194, 141 237, 194, 141, 1665
08  160 DATA 238 194 141, 233 194, 141 240 194, 141, 24 1 1963
F8  170 DATA 194, 141, 242 194, 141, 243, 194, 141, 244, 18 4 1825
DC  180 DATA 141 245 194 141, 246 194 141, 247 194, 16 8 1912
C2  190 DATA 128 141, 6 212, 1 41 13 212 141, 20 212 1 226
82  200 DATA 169 255 141, 248, 184 169, 15, 141, 244, 194 , 1770
81  210 DATA 88, 96, 72, 138, 72 , 152, 72 32, 27, 183 942
F2  220 DATA 205, 248, 194, 173 248, 194, 201, 0, 240, 8, 1 712
E8  230 DATA 104, 168, 104, 170, 104, 76 237, 246 169, 30, 1428
1B  240 DATA 141, 248, 194, 206, 250 194, 173, 250 194, 20 1, 2051
E3  250 DATA 0, 240, 8 104, 168 , 104 170,*104, 76, 237, 12 11
0B  260 DATA 246 164, 253, 177, 251 141, 0, 212, 32, 251, 1727
A8  270 DATA 192, 177, 251, 141, 1, 212, 32, 251, 192 177, 1826
3D  280 DATA 251, 141, 7, 212 3 2, 251, 192, 177 251, 141, 1655
FF  290 DATA 8, 212, 32, 251, 10 2 177 251 141, 14 212, 1 450
AD  300 DATA 32, 251, 192, 177, 251, 141, 15 212, 32, 251, 1554
03  310 DATA 192 177 251, 141, 250, 194, 32, 251, 192 169 , 1849
5C  320 DATA 0, 141, 4, 212 141 , 11 212 141, 18 212, 103 2
92  330 DATA 168, 33 141, 4 21 2, 141, 11 212, 141 18 10 82
04  340 DATA 212, 132, 253, 104, 168, 104 170, 104, 76, 237 , 1560
C0  350 DATA 246, 200 204 251, 194, 200, 18 165, 252, 205 , 1943
9A  360 DATA 252, 184, 200, 11, 169, 105, 133, 252, 169, 80, 1683
D2  370 DATA 133, 253, 160, 80, 98, 192, 0, 240, 1, 96, 1251
7F  380 DATA 230, 252, 96, 173, 0, 220, 201, 127 208, 3, 15
```

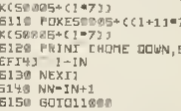
```
10
B7 350 DATA 76, 52, 154, 201, 1
11, 240, 50, 201, 126, 240,
1531
52 400 DATA 88, 201, 123, 240,
122, 201, 115, 208, 3, 76, 1
355
F0 410 DATA 202, 153, 201, 125,
240, 81, 201, 107, 208, 3,
1561
26 420 DATA 76, 252, 153, 201,
103, 208, 3, 76, 20, 154, 13
26
E5 430 DATA 201, 110, 208, 3, 7
6, 44, 154, 201, 105, 208, 1
354
70 440 DATA 3, 76, 68, 154, 76,
52, 154, 208, 238, 154, 133
5
8A 450 DATA 173, 236, 154, 201,
0, 240, 3, 76, 52, 154, 140
9
20 460 DATA 169, 255, 141, 236,
154, 206, 237, 154, 173, 23
7, 2042
DD 470 DATA 154, 201, 0, 240, 3
, 76, 52, 154, 169, 10, 1175
C5 480 DATA 141, 237, 154, 230,
32, 208, 76, 52, 154, 169,
1581
68 490 DATA 1, 141, 238, 154, 7
5, 52, 154, 165, 0, 141, 124
6
56 500 DATA 238, 154, 76, 52, 1
54, 206, 235, 154, 173, 235,
1845
E5 510 DATA 154, 201, 0, 240, 3
, 76, 52, 154, 169, 255, 142
4
E9 520 DATA 141, 233, 154, 206,
242, 154, 173, 242, 154, 20
1, 2026
44 530 DATA 0, 240, 3, 76, 52,
154, 165, 10, 141, 242, 1167
93 540 DATA 154, 169, 255, 141,
233, 154, 206, 244, 154, 17
3, 2005
38 550 DATA 244, 154, 141, 24,
212, 76, 52, 154, 206, 240,
1623
37 560 DATA 154, 173, 240, 154,
201, 0, 240, 3, 76, 52, 141
3
54 570 DATA 154, 169, 255, 141,
240, 154, 206, 243, 154, 17
3, 2009
D6 580 DATA 243, 154, 201, 0, 2
04, 115, 168, 10, 141, 243,
1527
87 590 DATA 154, 169, 255, 141
240, 154, 238, 244, 154, 17
3, 2042
46 600 DATA 244, 154, 141, 24,
212, 76, 52, 154, 206, 253,
1636
20 610 DATA 154, 173, 253, 154,
201, 0, 240, 3, 76, 52, 142
6
52 620 DATA 154, 169, 255, 141,
253, 154, 206, 139, 192, 76
1815
DE 630 DATA 52, 154, 206, 254,
154, 173, 254, 154, 201, 0
1762
15 640 DATA 240, 3, 76, 52, 154
169, 255, 141, 254, 154, 1
619
5A 650 DATA 238, 139, 192, 76,
52, 154, 206, 255, 154, 173,
1758
3E 660 DATA 255, 154, 201, 0, 2
08, 38, 169, 255, 141, 255,
1716
C3 670 DATA 154, 206, 105, 153,
206, 112, 154, 76, 52, 154,
1572
FD 680 DATA 206, 0, 195, 173, 0
, 195, 201, 0, 208, 14, 1152
E4 690 DATA 169, 255, 141, 0, 1
95, 238, 105, 153, 238, 112,
1646
0D 700 DATA 154, 76, 52, 104, 1
73, 230, 154, 201, 1, 240, 1
603
55 710 DATA 1, 56, 206, 246, 15
4, 173, 246, 154, 201, 0, 15
57
E0 720 DATA 240, 1, 56, 165, 25
5, 141, 246, 154, 206, 247,
1735
1C 730 DATA 154, 173, 247, 154,
201, 0, 240, 1, 56, 165, 15
15
D5 740 DATA 10, 141, 247, 154,
238, 32, 208, 56, 165, 237,
1572
13 750 DATA 141, 48, 3, 169, 24
6, 141, 41, 3, 165, 0, 553
F1 760 DATA 152, 0, 157, 4, 212
, 232, 224, 25, 208, 240, 14
66
CE 770 DATA 55, 40, 0, 255, 0,
255, 0, 255, 0, 72, 581
7D 780 DATA 0, 255, 0, 255, 137
, 255, 0, 163, 0, 255, 1348
3F 790 DATA 0, 101, 0, 255, 10,
72, 0, 255, 0, 103, 982
57 800 DATA 0, 255, 0, 255, 0
255, 0, 255, 0, 255, 1251
37 810 DATA 0, 255, 0, 255, 0,
0, 0, 255, 0, 0, 773
35 820 DATA 0, 255, 0, 255, 0,
255, 0, 255, 0, 255, 1275
6F 830 DATA 0, 255, 0, 255, 0,
16, 0, 255, 0, 255, 1036
67 840 DATA 0, 48, 0, 0, 255, 0, 2
55, 0, 0, 1, 1, 568
8C 1000 REM  HF LF NOTE
67 1010 DATAC0,268,C#0,284,D0,3
01,D#0,318,E0,337,F0,358,F#0
,379,G0,401,G#0,425
1C 1020 DATA#0,451,A#0,477,B0,5
06,C1,536,C#1,568,D1,602,D#1
,637,E1,675,F1,716
CE 1030 DATAF#1,758,G1,803,G#1,
851,A1,902,A#1,955,B1,1012,C
2,1072,C#2,1136,D2,1204
39 1040 DATAD#2,1275,E2,1351,F2
,1432,F#2,1517,G2,1607,G#2,1
703,A2,1804,A#2,1911
3C 1050 DATA#2,2025,C3,2145,C#3
,2273,D3,2408,D#3,2551,E3,27
03,F3,2864,F#3,3034
EF 1060 DATAG3,3215,G#3,3406,A3
,3608,A#3,3823,B3,4050,C4,42
91,C#4,4547,D4,4817
A1 1070 DATAD#4,5103,E4,5407,F4
,5730,F#4,6068,G4,6430,G#4,6
812,A4,7217,A#4,7647
F6 1080 DATA#4,8101,C5,8583,C#5
,9094,D5,9634,D#5,10207,E5,1
0814,F5,11457,F#5,12139
05 1090 DATA#5,12860,G#5,13625,
A5,14435,A#5,15294,B5,16203,
C6,17167,C#6,18188
E5 1100 DATA#6,19265,D#6,20415,
E6,21623,F6,22915,F#6,24278,
G6,25721,G#6,27251
73 1110 DATA#6,28871,A#6,30588,
B6,32407,C7,34334,C#7,36376
D7,38539,D#7,40830
04 1120 DATA#7,43258,F7,45833,F
#7,48556,G7,51443,G#7,54502,
A7,57743,A#7,61176
F8 1130 DATA#7,64814
A2 1200 GOSUB5030
31 1201 INPUT [CLR]DO YOU WANT
A PRESET TUNE OR THE MUSIC
EDITOR [RVSON]M[RVSOFF] OR C
[RVSON]E[RVSOFF]  D$
35 1202 IF$="E" THEN10000
A4 1203 IF$<>"M" THEN1201
E8 1204 PRINT [CLR]HANG ON A SE
C
6C 1205 FOR I=1TO55 READA$(I) A$
(I) NEXT
1C 1210 I=50000
C6 1220 READA$,B$,C$,D$
22 1225 IFA$= "-1"THENPRINT"FINI
SHED." GOTO6000
C8 1230 FORJ=1TO55
72 1240 IFA$=A$(J)THENA=A(J):GO
TO1260
AE 1250 NEXTJ
10 1255 PRINTA$ " IS INVALID IN
NOTE" (I-50000)/7+1:END
E1 1260 FORJ=1TO55
7F 1270 IFB$=A$(J)THENB=A(J):GO
TO1290
D1 1280 NEXTJ
5E 1285 PRINTB$  IS INVALID IN
NOTE" (I-50000)/7+1 END
4E 1290 FORJ=1TO55
8B 1300 IFC$=A$(J)THENC=A(J) GO
TO1320
E8 1310 NEXTJ
7F 1315 PRINTC$," IS INVALID IN
NOTE" (I-50000)/7+1 END
D6 1320 A1=INT(A/256) B1=A-A1*2
56
F5 1330 A2=INT(B/256) B2=B-A2*2
56
C4 1340 A3=INT(C/256) B3=C-A3*2
56
53 1350 IFDU>255OR DU<0THENPRINT
"DURATION  DU  IS INVALID IN
NOTE" (I-50000)/7+1 END
D5 1370 POKEI,B1 I=I+1
F2 1380 POKEI,A1 I=I+1
B6 1390 POKEI,B2 I=I+1
D6 1400 POKEI,A2 I=I+1
8B 1410 POKEI B3 I=I+1
9C 1420 POKEI,A3 I=I+1
24 1425 POKEI DU I=I+1
30 1430 IF I>5320THENPRINT [CLR
]FULL FULL FULL FULL FULL FU
LL FULL FULL  GOTO6000
51 1440 GOTO1220
3E 2000 DATAF1 F1 F1,25
02 2010 DATAC2,C2 C2,25
5C 2020 DATAF1,F1 F1,25
CE 2030 DATAC2 C2 C2,25
70 2040 DATAF1,F1,F1,25
FA 2050 DATAC2 C2 C2 25
E5 2060 DATAF1 F1,F1 25
H7 2070 DATAC2,C2 C2,25
37 2080 DATAF1,A2,F1 12
EE 2090 DATAF1 A#2 F1 12
E0 2100 DATAC2 C3 C2 12
80 2110 DATAC2,D3 C2,12
30 2120 DATAF1 C3 F1 25
27 2130 DATAC2 A2 F3,25
DD 2140 DATAF1 A2 F3 25
73 2150 DATAC2,C3,G3 25
04 2160 DATAF1,F3,A3 25
7E 2170 DATAC2 F2 A3,25
73 2180 DATAF1 A2 F1,12
3E 2190 DATAF1 A#2 F1 12
5E 2200 DATAC2,C3 C1,12
0E 2210 DATAC2 D3,C1,12
0C 2220 DATAF1 C3,F1 25
E3 2230 DATAC2 A2,F3 25
53 2240 DATAF1 A2,F3 25
03 2250 DATAC2,A#2,E3 25
95 2260 DATAF1,A2 F3,25
58 2270 DATAC2 A2,F3,25
```

```
EF  2280 DATAF1,A2,F1 12
A6  2290 DATAF1,A#2,F1 12
F7  2300 DATAC2 C3,C1 12
4A  2310 DATAC2 D3,C2 12
41  2320 DATAF1 C3 F1 25
BA  2330 DATAC2 A2,F3,25
96  2340 DATAF1,A2,F3 25
B2  2350 DATAC2 C3 D3 25
6B  2360 DATAF1 F3 A3 25
BC  2370 DATAC2 F2 A3 25
2A  2380 DATAF1 A2,F1,12
05  2390 DATAF1 A#2,F1 12
DB  2400 DATAC2 C3,C1 12
11  2410 DATAC2,D3,C1 12
7D  2420 DATAF1 C3 F1 25
06  2430 DATAC2,A2,F3 25
92  2440 DATAF1,A2,F3 25
CB  2450 DATAC2,A#2,E3,25
9E  2460 DATAF1 A2 F3,25
3E  2470 DATAC2 A2 F3,25
21  2480 DATAC1,C1 C1,25
E0  2490 DATAC2,E3 D3,25
AD  2500 DATAC1,C1 C1,25
AA  2510 DATAC2,F3 G#3,25
59  2520 DATAC1 C1 C1 25
E4  2530 DATAC2 F#3,A3,25
C5  2540 DATAC1 C1,C1,25
F8  2550 DATAC2 G3 A#3,25
1F  2560 DATAC1,A#3 D4,25
02  2570 DATAC2,A3,C4 25
9F  2580 DATAC1 G3 A#3 25
78  2590 DATAC2 F3 A3 25
B4  2600 DATAC1 E3,G3 25
C3  2610 DATAC2 F3 A3,25
45  2620 DATAC1,E3 C4,25
2D  2630 DATAC2,C2 C2,25
2A  2640 DATAC1,C1 C1,25
DF  2650 DATAC2,E3,B3,25
F6  2660 DATAC1,C1 C1 25
3D  2670 DATAC2,F3,G#3,25
22  2680 DATAC1,C1,C1 25
B1  2690 DATAC2,F#3,A3,25
EE  2700 DATAC1,C1 C1 25
48  2710 DATAC2 G3 A#3,25
8F  2720 DATAC1,A#3,D4,25
22  2730 DATAC2 A3,C4,25
7F  2740 DATAC1,G3 A#3,25
30  2750 DATAC2 F3,A3 25
54  2760 DATAC1,E3,G3,25
CC  2770 DATAC1 C3 D3 25
6C  2780 DATA82 B2 B2 25
FA  2790 DATAA#2 A#2,A#2,25
C5  2800 DATAF1,A2,F1,12
12  2810 DATAF1,A#2 F1 12
F5  2820 DATAC2,C3 C2 12
A0  2830 DATAC2,D3,C2 12
27  2840 DATAF1 C3,F1,25
B4  2850 DATAC2 A2 F3,25
0C  2860 DATAF1 A2 F3 25
48  2870 DATAC2 C3 G3,25
0D  2880 DATAF1,F3 A3 25
D2  2890 DATAC2,F2 A3,25
00  2900 DATAF1,A2 F1,12
CF  2910 DATAF1 A#2,F1,12
6E  2920 DATAC2,C3,C1 12
E3  2930 DATAC2,D3 C1,12
23  2940 DATAF1 C3 F1,25
F0  2950 DATAC2,A2,F3,25
E8  2960 DATAF1,A2 F3,25
9E  2970 DATAC2 A#2,E3,25
34  2980 DATAF1 A2 F3,25
00  2990 DATAC2 A2,F3,25
3C  3000 DATAF1 A2,F1,12
53  3010 DATAF1,A#2 F1,12
AD  3020 DATAC2,C3 C2,12
58  3030 DATAC2,D3 C2,12
5F  3040 DATAF1 C3 F1 25
CC  3050 DATAC2 A2 F3 25
A4  3060 DATAF1 A2,F3 25
00  3070 DATAC2,C3 G3 25
BB  3080 DATAF1 F3,A3,25
87  3090 DATAC2,F2 A3 25
37  3100 DATAF1,A2 F1,12
EE  3110 DATAF1 A#2,F1,12
5F  3120 DATAC2,C3,C1 12
BA  3130 DATAC2 D3 C1,12
3B  3140 DATAF1,C3,F1 25
27  3150 DATAC2 A2,F3,25
DD  3160 DATAF1 A2 F3 25
F7  3170 DATAC2 A#2,E3,25
E9  3180 DATAF1 A2 F3,25
7F  3190 DATAC2,A2,F3,25
EB  3200 DATAC3,D#3 F3 25
CD  3210 DATAC3 D#3,F3,25
9F  3220 DATAC3 D#3,F3 25
C0  3230 DATAA#2 D#3,F3 12
41  3240 DATAF2 D#3,F3 12
65  3250 DATAC3 D#3,F3 25
01  3260 DATAD#3 D#3,F3 25
B7  3270 DATAD#3 D#3,F3 25
A6  3280 DATAD#3,D#3,F3 25
DA  3290 DATAA#2 D3 F3,25
64  3300 DATAA#2 D3 F3,25
7E  3310 DATAA#2 D3,F3,25
FB  3320 DATAA2,D3 F3,12
12  3330 DATAG2 D3 F3,12
67  3340 DATAF2,D3 F3,25
1E  3350 DATAD3,D3 F3,25
3B  3360 DATAD3 D3,F3 25
B2  3370 DATAD3 D3,F3,25
44  3380 DATAC3 D#3,F3,25
66  3390 DATAC3,D#3 F3 25
BB  3400 DATAC3,D#3,F3,25
61  3410 DATAA2,D#3,F3,12
16  3420 DATAF2 D#3,F3,12
1E  3430 DATAC3 D#3,F3,25
06  3440 DATAD#3,D#3,F3,25
CC  3450 DATAD#3,D#3,F3,25
7A  3460 DATAD#3 D#3 F3,25
D3  3470 DATAA#2 D3 F3,25
B6  3480 DATAA#2 D3 F3 25
13  3490 DATAA#2 D3,F3 12
0A  3500 DATAA2 D3,F3,12
FF  3510 DATAA#2 D3,F3,12
AC  3520 DATAG2,D3,F3,12
35  3530 DATAF2 D3 F3,25
5C  3540 DATAD3,D3 F3,25
A2  3550 DATAF3,F3 G#3,25
A4  3560 DATAF3 F3,G#3 25
67  3570 DATAD3 F3,G3 25
55  3580 DATAD3 F3 G3 25
12  3590 DATAD3,F3 G3,25
05  3600 DATA82,F3,G3,12
3D  3610 DATAG2 F3 G3,12
EE  3620 DATAC3,D#3 G3,25
08  3630 DATAD#3 D#3,G3,25
AE  3640 DATAD#3,D#3,D3 25
3C  3650 DATAD#3 D#3,G3 25
61  3660 DATAC3 D#3 F3 25
73  3670 DATAC3,D#3 F3,25
35  3680 DATAC3 D#3 F3 25
0A  3690 DATAA2,D#3 F3,12
80  3700 DATAF2,D#3 F3 12
D4  3710 DATAD3,F3 A#2 25
EF  3720 DATAD3,D3 F3 25
41  3730 DATAD3 D3 F3 25
53  3740 DATAD3,D3,F3 25
05  5555 DATA 1 -1,-1,-1
3F  6000 A=INT(I/256) B=I-A*256
D4  6010 PRINTA B,I
AB  6020 POKE49516,A POKE49515 B

46  6021 PRINT"CCLR]DO YOU WANT
    TO SAVE THE PROGRAM AS A M/C
    ";
4F  6022 PRINT"FILE OR DO YOU WA
    NT TO LOAD A PROGRAM"
68  6023 INPUT NOW WITHOUT SAVIN
    G IT CRVSON]SCRVSOFF] OR CRV
    SON]LCRVSOFF] .Q$
25  6024 IFQ$="S"THEN6030
8C  6025 IFQ$<> L"THEN6021
38  6026 GOTO6150
E3  6030 A1$="**********************
    **********************
```

```
F9  6040 A2$="CSPC40]
40  6050 PRINT"CSPC14]P A C  SOF
    TWARE"
54  6070 PRINT
6A  6080 PRINT"CSPC17]PRESENTS"
7B  6090 PRINT
B5  6100 PRINT"CSPC16]MUSILOAD V
    1"
3F  6110 PRINT PRINT
44  6120 PRINT"CSPC6]WRITI6N BY
    P A CROTON 14/8/87"
35  6130 J=22 FOR1=1TO12
87  6140 PO=1:GOSUB7000 PRINTA1$
    ;
DF  6150 PO=1-1 GOSUB7000 PRINTA
    2$;
58  6160 PO=J:GOSUB7000 PRINTA1$
    ,
73  6170 PO=J+1:GOSUB7000 PRINTA
    2$
85  6180 J=J-1 NEXT1 RETURN
6A  6190 PRINT CCLR]TYPE  SYS491
    52  TO START ANDCSPC12] SYS4
    0800  TO TURN OFF
DF  6200 PRINT THEN LOAD TAPE PR
    OGRAM AS NORMAL "
95  6210 PRINT"CDOWN]COMMANDS AV
    AILABLE WHILE LOADING ARE -

FD  6220 PRINT
F5  6230 PRINT"JOYSTICKCSPC18]DE
    SCRIPTION
1A  6240 PRINT"--------CSPC16]--
    -- ------ "
53  6250 PRINT"FIRECSPC15]FLASH
    BORDER"
7B  6260 PRINT"UPCSPC17]AUTO BOR
    DER FLASH ON"
E5  6270 PRINT DOWNCSPC15]AUTO B
    ORDER FLASH OFF";
3A  6280 PRINT"LEFTCSPC15]VOLUME
    DOWN
7E  6290 PRINT"RIGHTCSPC14]VOLUM
    E UP"
55  6300 PRINT"FIRE & UPCSPC10]I
    NCREASE FLASH SPEED
B2  6310 PRINT"FIRE & DOWNCSPC8]
    DECREASE FLASH SPEED
A0  6320 PRINT"FIRE & LEFTCSPC8]
    INCREASE MUSIC SPEED
6F  6330 PRINT FIRE & RIGHTCSPC7
    ]DECREASE MUSIC SPEED"
5C  6340 END
7A  7000 PRINT"CHOME]";
1D  7010 FORPP=1TOPO PRINT"CDOWN
    ]", NEXT
03  7020 RETURN
A5  8000 PRINT CCLR]SAVING MUSIL
    OAD"
F0  8010 INPUT ENTER DEVICE NUMB
    ER 1=TAPE 8 OR 9 DISK ",DE
A6  8020 IFDE<1ORDE>2SSTHEN8000
3B  8025 PRINT"HOLD DN A SEC!
41  8030 DATA-1,-2,-3,-4,-5
B1  8040 DATA168,54 133 1,169,8,
    162,8,160,255,32,186,255
B5  8050 DATA165,2,162 211,160,2
    ,32 189,255
3D  8060 DATA165 1,133,247 169 0
    133 248,162 255,160,127,169
    ,247,32 216 255
13  8070 DATA169 55 133,1 96
E4  8080 READA$ IFA$="-1"THENREA
    DA$ IFA$="-2 THENREADA$ IFA$
    <> -3 THEN8100
2C  8081 IFA$<>" 3 THEN8100
0B  8085 READA$ IFA$="-4"THENREA
    DA$:IFA$=" 5"THEN8110
DA  8100 GOTO8082
8D  8110 FOR1=67TO722 READA:POK
    E1 A NEXT
```

```
64  8120 N$= MUSILOAD  DEV=DE S=
    49152 E=53246
59  8130 X=S GOSUB8200 POKE702,A
    1:POKE703 A2
6F  8140 X=E GOSUB8200 POKE710 A
    1 POKE712 A2
4A  8150 POKE688 255
2E  8160 POKE653 8
E5  8170 FOR I=1TO6 POKE722+I,ASC
    (MID$(N$,I,1)) NEXT
B1  8180 POKE684,DEV:POKE686 DEV

C7  8190 SYS678
FB  8195 PRINT [CLR]YOUR PROGRAM
    IS NOW SAVED UNDER THE NAME
    MUSILOAD
81  8196 PRINT"LOAD IT WITH LOAD
    MUSILOAD  DEVICE 1
A4  8197 PRINT"[DOWN]PRESS ANY K
    EY ' POKE198 0:WAIT198,1:GOT
    O6190
8A  8200 A2=INT(X/256):A1=X A2*2
    56 RETURN
AE  10000 FOR I=1TO6 READA$(I) A
    [I] NEXT
6F  10004 NN=0:HN=0
16  10005 PRINT [CLR]MUSILOAD MU
    SIC EDITOR
DE  10010 PRINT"[DOWN2]"
80  10020 PRINT 1  ENTER NOTE
16  10030 PRINT 2  ERASE NOTE "
E5  10040 PRINT"3  VIEW NOTES '
B4  10050 PRINT"4  PLAY TUNE "
60  10060 PRINT 5  FINSHED
36  10065 PRINT"6  INSERT NOTE "

82  10070 GET A$ IFVAL(A$)<1ORVAL
    (A$)>6THEN10070
5F  10080 IFA$= 1"THEN11000
41  10090 IFA$= 2 THEN12000
73  10100 IFA$="3 THEN13000
6D  10110 IFA$= 4'THEN14000
7F  10120 IFA$= 5 THEN15000
A4  10125 IFA$="6 THEN16000
E6  10130 GOTO10070
D8  11000 PRINT [CLR]ENTER NOTE
    " NN
0F  11010 PRINT ENTER NOTE NUMBE
    R OR PRESS RETURN IF[5PC4]AB
    OVE 10 CORRECT "
4C  11020 A$=  INPUTA$
76  11030 IFA$=" THEN11040
0F  11035 NN=VAL(A$)
E1  11040 IFNN<0ORNN>450THEN1100
    0
10  11045 IFNN>HNTHENHN=NN
43  11050 PRINT ENTER NOTE FOR V
    OICE 1  ;INPUTN1$
F3  11060 PRINT ENTER NOTE FOR V
    OICE 2"  INPUTN2$
6F  11070 PRINT"ENTER NOTE FOR V
    OICE 3"  INPUTN3$
4E  11080 PRINT"ENTER DURATION O
    F NOTE' ;INPUTDU
20  11090 FOR I=1TO6 IFN1$=A$(I)
    THEN11100
24  11095 NEXT I PRINT'ERROR  GOT
    O11050
DA  11100 F1=A(I) FOR I=1TO6 IFN
    2$=A$(I)THEN11110
AD  11105 NEXT I PRINT"ERROR' GOT
    O11050
4D  11110 F2=A(I) FOR I=1TO6 IFN
    3$=A$(I)THEN11120
AA  11115 NEXT I PRINT'ERROR ;GOT
    O11070
11  11120 F3=A(I) IFDU<0ORDU>255
    THENPRINT'ERROR  GOTO11080
04  11130 K=F1 GOSUB8200 POKE500
    00+(NN*7) A1 POKE50000+(NN*7
    )+1 A2
3F  11140 K=F2 GOSUB8200 POKE500
    00+(NN*7)+2 A1 POKE50000+(NN
    *7)+3 A2
1C  11150 K=F3:GOSUB8200 POKE500
    00+(NN*7)+4 A1 POKE50000+(NN
    *7)+5 A2
44  11160 POKE50000+(NN*7)+6 DU
11  11170 HN=NN+1 GOTO10005
88  12000 PRINT"[CLR]ERASE NOTE
    ;A$=""
52  12010 INPUT"PLEASE ENTER THE
    NOTE TO ERASE OR PRESS RETU
    RN IF NONE",A$
19  12020 IFA$=  THEN10005
2F  12030 A=VAL(A$) IFA<0ORA>450
    THEN12000
59  12040 PRINT"[CLR]PLEASE WAIT
    !"
F2  12050 FOR I=A TO455
A3  12060 POKE50000+(I*7),PEEK(5
    0000+((I+1)*7))
G3  12070 POKE50000+(I*7)+1,PEEK
    (50000+((I+1)*7)+1)
27  12080 POKE50000+(I*7)+2,PEEK
    (50000+((I+1)*7)+2)
33  12090 POKE50000+(I*7)+3,PEEK
    (50000+((I+1)*7)+3)
EF  12100 POKE50000+(I*7)+4,PEEK
    (50000+((I+1)*7)+4)
33  12110 POKE50000+(I*7)+5,PEEK
    (50000+((I+1)*7)+5)
57  12120 POKE50000+(I*7)+6,PEEK
    (50000+((I+1)*7)+6)
D8  12130 PRINT"[HOME DOWN,5PC5,
    LEFT5) ,(HN-A)-1+A
15  12140 NEXT
E2  12150 GOTO10005
74  13000 PRINT [CLR]VIEW NOTES
    "
63  13010 INPUT"STARTING NOTE ",
    SN
1E  13020 IFSN<0ORSN>450THEN1300
    0
E8  13030 FOR I=SNTO450
3F  13040 PRINTI,
5E  13050 H1=PEEK(50000+(I*7))
AC  13060 L1=PEEK(50000+(I*7)+1)

E4  13070 H2=PEEK(50000+(I*7)+2)
E5  13080 L2=PEEK(50000+(I*7)+3)
0D  13090 H3=PEEK(50000+(I*7)+4)
32  13100 L3=PEEK(50000+(I*7)+5)
78  13110 DU=PEEK(50000+(I*7)+6)
B5  13120 F1=L1*256+H1
4E  13130 F2=L2*256+H2
57  13140 F3=L3*256+H3
76  13150 FORJ=1TO6 IFF1=A(J)TH
    EN13155
B2  13155 NEXTJ N1$="NU' GOTO131
    60
C1  13159 N1$=A$(J)
AA  13160 FORJ=1TO6 IFF2=A(J)TH
    EN13165
08  13165 NEXTJ N2$="NU  GOTO131
    70
10  13169 N2$=A$(J)
0A  13170 FORJ=1TO6 IFF3=A(J)TH
    EN13175
F6  13175 NEXTJ N3$="NU :GOTO131
    80
07  13179 N3$=A$(J)
5A  13180 PRINTN1$;"   N2$,' ',N
    3$,DU
E5  13185 GET A$ IFA$=CHR$(13)THE
    N10005
84  13190 NEXTI
60  13200 GOTO10005
40  14000 PRINT"[CLR]PLAY TUNE R
    ETURN STOPS
06  14010 FORI=5427TO5425S POKE
    I,0 NEXT
AE  14020 POKE54296,15:POKE54277
    5 POKE54284 5 POKE54291,3
1A  14030 POKE54278 128 POKE5428
    5 128 POKE54292 128
74  14040 FORI=0TO450
0E  14050 L1=PEEK(50000+(I*7))
C5  14060 H1=PEEK(50000+(I*7)+1)

F5  14070 L2=PEEK(50000+(I*7)+2)
E0  14080 H2=PEEK(50000+(I*7)+3)
3D  14090 L3=PEEK(50000+(I*7)+4)
62  14100 H3=PEEK(50000+(I*7)+5)
05  14110 DU=PEEK(50000+(I*7)+6)
64  14120 POKE54272,L1 POKE54273
    ,H1
75  14130 POKE54279,L2 POKE54280
    ,H2
A6  14140 POKE54286 L3 POKE54287
    ,H3
B5  14150 POKE54276,33 POKE54283
    ,33
27  14160 POKE54290,33 FORJ=1TOD
    U NEXT
5F  14170 GET A$:IFA$=CHR$(13)THE
    NFORI=5427TO5425S POKEI,0 N
    EXT GOTO10005
62  14180 NEXTI
3A  15000 I=50000+(HN*7)+7 GOTO6
    000
A5  16000 PRINT"[CLR]INSERT NOTE
    "
F7  16010 INPUT"INSERT A NOTE AF
    TER NOTE ',IN
B5  16020 IFIN<0ORIN>450THEN1600
    0
37  16030 PRINT"[CLR]PLEASE WAIT

E8  16040 FORI=450TOIN+15TEP-1
26  16050 POKE50000+(I+1)*7),PE
    EK(50000+(I*7))
B8  16060 POKE50001+(I+1)*7),PE
    EK(50001+(I*7))
74  16070 POKE50002+(I+1)*7),PE
    EK(50002+(I*7))
EC  16080 POKE50003+(I+1)*7) PE
    EK(50003+(I*7))
D0  16090 POKE50004+(I+1)*7),PE
    EK(50004+(I*7))
20  16100 POKE50005+(I+1)*7),PE
    EK(50005+(I*7))
24  16110 POKE50006+(I+1)*7),PE
    EK(50006+(I*7))
67  16120 PRINT [HOME DOWN,5PC4,
    LEFT4)  I-IN
0C  16130 NEXTI
3F  16140 NN=IN+1
8C  16150 GOTO11000
```

Weos II



```
PROGR[illegible]

10 COLOL[illegible] 5 COLOUR2 1
```

```
3 GOSUB1840 DESK38
20 PRINT"#S(14)CHR$(8)
100 GOSUB1380 PAUSE0
110 GOSUB1180 PAUSE0 MENUZON PAU
SE0 MENUOFF PAUSE0
120 WSWAP PAUSE0 WCLOSE PAUSE0 W
MOVE5 5
130 PAUSE0 GOSUB1180 PAUSE0 WCOP
Y1 1
140 PAUSE0 WCLOSE PAUSE0 WMOVE7,
10
150 PAUSE0 GOSUB1630: PAUSE0 WSW
AP
160 PAUSE0 GOSUB1380 PAUSE0 WSWA
P PAUSE0
165 MENUION PAUSE0 MENUOFF
170 WCLOSE PAUSE0 WCLOSE:PAUSE0
WCLOSE PAUSE0 WCLOSE PAUSE0 GOSU
B1000
180 PAUSE0 GOSUB1180 PAUSE0 GOSU
B1270 PAUSE0:GOSUB1830 PAUSE0 WS
WAP PAUSE0
181 MENUION PAUSE0 MENUOFF PAUSE
0
190 WCLOSE PAUSE0 WCOPYS 4:PAUSE
0 WCLOSE PAUSE0 WSWAP:PAUSE0 WCL
OSE PAUSE0
200 GOSUB1720 WCLOSE PAUSE0 WCLO
SE PAUSE0 RUN
1000 WOPEN0 2 40 18 "PROGNOSE ",1
1010 WPRINT 3
                    ↑
                    ■
1020 WPRINT 3 38"VALES"          10
00      1150        1322 ,
1030 WPRINT 4 4"-OSTS"            3
50      482         463 ,
1040 WPRINT"4 5"-MOFIT            6
50      748         860 ,
1050 WPRINT 3 6"
1060 WPRINT"4 7"-[▼]◆  |    ↑  ◆
-  1305
1070 WPRINT 4 8"      -AR         2
50      288         331 ,
1080 WPRINT 4 9"    -ALLS 3
1000"      115        132"
1090 WPRINT"3 0"  ◆ALARY          1
50      172         158 ,
1100 WPRINT"31"
1110 WPRINT"312"DIAL              5
00      575         861 ,
1120 WPRINT"313"
1130 WPRINT"314" EIT              1
50      172         198"
1140 WPRINT" 15"
1150 WPRINT "-ELL 15    [        10
0
1160 WPRINT 15>115 ||||||||||||||
 ||||||||||||||||"
1170 RETURN
1180 WOPEN0 3 30 10 "ADDRESS ",6,
1 14
1190 WPRINT      AME:  IM
1200 WPRINT          ◆MITH
1210 WPRINT      ◆EX   MALE
1220 WPRINT"◆DDRESS  271 ◆NYSIRE
ET "
1230 WPRINT              ◆NYWHERE
1240 WPRINT  OMMENI   ◆MBITIOUS"
1250 WPRINT 8 RT -   ■ 2   -4 ■ 2
 -L   | ■ 2 -- |■|
1260 RETURN
1270 WOPEN2 10,36 12, LETTER DOC
  2 1 12
1280 WPRINT   03    002 1 02"
1290 WPRINT' 3 ■   |      1      |
  2     ||      3 |
1300 WPRINT 4 8"EAR ◆18,
1310 WPRINT 4   FUR 5 YEAR PLAN
HAS SUCCESS, OU ,
1320 WPRINT"ANY PRODUCTS ARE MUC
H IMPROVED NOW ,
1330 WPRINT' 12% OF OUR EMPLOYEE
S ARE SPIES BU",
1340 WPRINT ORE FOLKS ARE TALKIN
G ABOUT US-
1350 WPRINT AN YOU ASK FOR MORE
MONEY?-
1360 RETURN
1380 WOPEN2 7,31 16 "GRAPHS  6 1
 11
1390 WPRINT   ◆ALES ◆URVEY '88 ◆
DUA◆OFI"
1400 WPRINT"
1420 WPRINT"500 "
1430 WPRINT 600 "
1440 WPRINT 700 "
1450 WPRINT'600 "
1460 WPRINT 500 "
1470 WPRINT 400 "
1480 WPRINT"300 "
1490 WPRINT 200 "
1500 WPRINT 100 "
1600 WPRINT"  0 "
1610 WPRINT                ◆        ◆
◆ [      ,
1620 RETURN
1630 WOPEN2,1,26,10, 'WEDS64 SYS
,7 1 6
1640 WPRINT "DESKTOP APP"
1650 WPRINT"WEDS64 BOOT
1660 WPRINT "WEDBASIC CODE
■
1670 WPRINT DUMMY 1
1680 WPRINT DUMMY 2
1690 WPRINT DEFAULT DATA
1700 WPRINT"# <-[-  >              <
"◆1>  ,
1710 RETURN
1720 WOPEN30,17,3 1,0 WPRINT
  "NTER YOUR "HOICE
1730 WPRINT"      ----- -
- "
1740 WPRINT   | "ISK "IRECTORY
1750 WPRINT   | "ORMAT "ISK"
1760 WPRINT'  | NITIALISE "ISK
1770 WPRINT"  | "ATALOG "ISK
1780 WPRINT"  | "HANGE "ROGRAM  A
ME"
1790 WPRINT   | "ELETE "ROGRAM"
1800 WPRINT   | "EWD "RROR "HANNE
L"
1810 WPRINT   | "HANGE "ISK  "
1820 WPRINT   | HANGE "ISK  "AME
1830 WPRINT'  | RITE "ROTECT "RO
GRAM
1840 WPRINT   | RITE "ROTECT "IS
K"
1850 WPRINT  ----------
--------
1870 PAUSE0 SCLOSE PAUSE0
1880 RETURN
1890 MENU1,12,7 1,     "-"-"+-[-[-
 ←[-[-"←"[-[-[-[-[-[-[-+ ◆T◆"-◆"[-
 |-"7 8 1
1900 A$= "OMPANY- OMMODORE  ←-O
MMODORE ◆←OMMODORE  ◆-"
1920 A$=A$+ "SION ◆YSTEM$- 1S1-O
RP--OMPSOFT"
1930 MENU2,20,13,0,A$,15,7,1,6
1940 B$=" OMPUTERS--OMMODORE -16
--OMMODORE ◆4◆-OMMODORE 128--OMM
ODORE 128-"
1950 B$=B$+ ◆MIGA 500-◆MIGA 1000
-◆MIGA 2000--OMMODORE "-"
1960 MENU3 16 15,0 B$,B,4 1 3
1970 RETURN
```

+ 4 Assembler

```
PROGRAM  ASSEMBLER LOD

10 AD=4057
20 FOR LN=160 TO 2380 STEP 10
30 RT=0
40 FOR DS=0 TO 15
50 READ BY POKE AD+DS BY RT=RT+B
Y
60 NEXT
70 READ CK IF RT<>CK THEN PRINT
 "ATA ERROR IN LINE" LN STOP
80 AD=AD+16
90 NEXT
100 PRINT "◆AVING "ROGRAM
110 POKE 43 1 POKE 44 16 POKE 45
,0 POKE 46,30 SAVE"O3M8 EXE  8
120 PRINT  "ROGRAM ◆AVED  ESET
MACHINE BEFORE      CONTINUING
130 END
140
150
160 DATA 12 16,10,0,158 32 52,49
 45 45 0 0 0 0 76 170   673
170 DATA 26 0,0 112 108,0 2 0 0
0,2 55 112 2 2 66  451
180 DATA 62 75 0 67 76 67 24 67,
76 68 216 67 76 73 80 67   1186
190 DATA 76 86 184 60 65 80,218,
68,65,80 136,73 78,88 232 73, 16
55
200 DATA 76 85 216 78,79 88,234,
80 72 65 72,40 72,00 0,80  1453
210 DATA 76 65,104,87,76,80 42 8
2 84 73 64 42 84 83 96 83  1252
220 DATA 65 67 66 83 65 88,248 8
3,65 73 120,84,65 88,170,84  145
6
230 DATA 65 83,168,84 83,88 186
84,80 65,138 84 80 83 154,84  16
31
240 DATA 85 65,152 66 67,67 144
66,67 83,176 66,65 81 240,66, 15
84
250 DATA 77 73 40 66 78 83,206,6
6 80 76,16 66 86,67,80 66, 1222
260 DATA 86 83,112 65 66 67  ◆ 65
 78,68 11 65,83 76 22 66  1015
270 DATA 73 84 33,67 77 80 44 87
,80 88 55 67,80 83 66 68  1119
280 DATA 69 67 77 65 75,82 88,73
,78 67 89 74 77 80 110 74, 1263
290 DATA 83 82 121 76 66 65 132
76,65 88,143 76 68,85 154 76  14
65
300 DATA 83 82 165 79 82 65 176
82 73 76 187 82 79 82,190 83  16
80
310 DATA 66,67 203,83 84 65,220
83 84 85 231 83 84 89 242 66  18
44
320 DATA 85,84 2,87 79 82 1 69 4
1 30,2,69 81 65 3,79  561
330 DATA 82,71 4,82 69,83 5 0 0
0 0,0 0 0,0 255,  851
```

```
340 DATA 185 101 117 255 108 125
 121 97 113 255 255 41 37 53 255
 45  2084
350 DATA 61 57 33 49 255 10,255
6 22 255 14 30 255 255 255 255
2067
360 DATA 255 255 36 255 255,44 2
55 255 255 255 255,255 201 197 2
13 255  3496
370 DATA 205,221 217 153,209 255
 255 224 228 255 255 238 255 255
 255 255,  3773
380 DATA 255 255 182,186 255 255
 204 255 255 255 255,255 255,255
 198 214  3889
390 DATA 255 255 206 222 255 255 255
 255 255 73 63 85 255 77 53 89 6
5  2784
400 DATA 81 255 255 255 230 246
255 238 254 255 255,255 255 255
255 255  3854
410 DATA 255 255 75 255 76 255 255 255,
255,108 255 255,255 255 255 32 2
55 255  3531
420 DATA 255 255 255 255 163 185
 181 255 173 189 185 181 177 255
 255 182  3347
430 DATA 185 255 182 174 255 180
 255 255 255 255 150 164 180 255
 172 188, 3361
440 DATA 255 255 255 255 74 255
78,88,255 78 94 255 255 255 255
255  3287
450 DATA 9 5 21 255 13 28 25 1 1
7 255 42 255 38 54 255 46, 1328
460 DATA 62 255 255,255 255 105
255 102 118 255 110 126 255 255
255 255  3174
470 DATA 255 255 233 228 245 255,237
 253 249 225 241 255 255 255 255 133
 149 255  3724
480 DATA 141 157 153 129 145 255
,255 255 134 255 150 142 255 255
 255 255  3191
490 DATA 255 255 255 132 148 255
,142 255 255 255 255 255 255 255
 255 193  3673
500 DATA 03 03 69 77 66 76 63 32
 159 65 73 76 63 32 79 78  1253
510 DATA 32 84 72 73 63 32 76 73
 78 69 46 0 211 69 77 66  1161
520 DATA 73 76 32 213 76 68 69 7
0 73 78 65 69 46,0 211 69  1318
530 DATA 77 66 73 76 32 210 65,6
8 63,70 73 76 69 68 46 0  1158
540 DATA 205 78 69 77 79 76 73 6
7 32,206 78,84 32,210 69,67  150
5
550 DATA 73 71 78 73 83 69,68 46
 0 194 65,68 32 211 69 77  1303
560 DATA 66 73 76 46 0 201 76 76
 63 71 85 76 32 207 69 69  1209
570 DATA 82 65 73 66 32 106 73 6
9,76 69 46 0,201 78 76 69  1277
580 DATA 71 65 76 32,205 78,69 7
7 79 78 73 67 32 198 73 84  1342
590 DATA 76,68 46 0 205,73 83 83
,73 78 71 32 207 69 69 82  1325
600 DATA 65 78 68 32 158 73 65,7
6 68 46 0 196 73 63,75 32, 1232
610 DATA 198 73 76 69 32 69 82 0
2 73 82 46 0 211 69 78 84  1350
620 DATA 65 88,32 157 82 82 73,8
2 46 0 201,76 76 69 71 65, 1311
630 DATA 76 32 209,65 65 70,04 7
3 84 89 45 0 201 76 76 69  1343
640 DATA 71 65 76 32 65,68 68 82
 69 83,83 73 78 71 32 77, 1093
650 DATA 73,68 69 46 0 206 73,84
 32 216 32 79 82 32 217 32  1353
660 DATA 73 75 68 69 68 0 32 10,
61 18 75 18 87 18 122 18  857
670 DATA 134,16,157 18 161 16 20
4 18 221 18 235 18 253 18 22 19
 1552
680 DATA 0 0 0,0 0 0,0 0 0,0 0
0 0 0 163, 168
690 DATA 32 162 16 132,20 134,21
 162 0 160 2 185 1 2,203 20  125
9
700 DATA 200 9 136 16 246 160,3
177 20 24,96 232 224 62,176,250,
 2035
710 DATA 165 20 105 4 133 20 165
 21,105 0,133 21 76 90,19 173  1
250
720 DATA 0 2 201,3 240 5,162,3,7
8,146 19 32 80 19,176 246  1410
730 DATA 96 32 112 27 163,40 19,
168 168,38,19 170,32 168,19,76
1392
740 DATA 85,29 234 234 134,20 13
2 21 160 0 177 20 240,6 32 210,
1745
750 DATA 255,200 208 246 96 0,0
0 0 0 0,0 0 0 0,201, 1208
760 DATA 65 144,6,201 51 176 2 5
6,96 24 96 201 48 144 250 201, 1
801
770 DATA 58 176 240,144 242 32 2
04 19 176 240 76 192,18 32 204,1
9  2075
780 DATA 176,232 201 65 144 227
201,71,176 223 144 218,234 234,2
34 76  2657
790 DATA 0 25 234 234 170,32 10
20,32 214 18 176 4 142 0,2, 1314
800 DATA 96 157 1 2 232 208 230
234 234 230 61 208 2 230 58 140
 2336
810 DATA 31 16 168,9,177 61,172,
31 16 96 234,234 234,234 234,185
 2095
820 DATA 45 166 46,133,112 134 1
13 168 0 177,112 208 2 24 96,205
 1733
830 DATA 0 2,208 48 162 0 200 20
0 200 200,177 112 221 1,2 200  1
533
840 DATA 27 232,236 0 2 144 242
160 1 177,112 141 30 16 200 177
 1897
850 DATA 112 141 20,16 200 177 1
12 141 29,16,56 96,78,32,25 32
 1283
860 DATA 16 20,201,32 240 1 96 3
2,10 20 76 99 20,234 234 32, 136
3
870 DATA 10 20 32 240 19 173 0 2
208,5 162,4,76 146 19 32  1140
880 DATA 32,20 144,12 162 2 173
27 16 201 1,208 5 76 146 19  124
4
890 DATA 162 0 169 1 141 26 16 2
24 0 240 1 96 160 0 173 0  1489
900 DATA 2 145 23 200 169,2,145
23 200 165 63 145 23 200 165,64
 1734
910 DATA 145 23 200 162 0 189 1
2 145 23,232 200,236 0 2 208  17
60
920 DATA 244,152 24 101 23 133 2
3 165 24,105 0 133 24 201 128 20
8  1606
930 DATA 5 162 0 76 146 19 160 0
 152 145 23 96,234 234 234 169
1855
940 DATA 0 133 65,133 66 32 10 2
0 32 222 15 176 1 96 201 85  127
1
950 DATA 176 4 41 16 144 2 233 5
5 24 8 65 38 66 176 25 6  1876
960 DATA 65 38 66 176 19 6 65 38
 66 176 13 6 65 38 66 176  1875
970 DATA 7 5 65 133 65,76 230 20
 162,10 76 146 19 234,234 76  15
58
980 DATA 64 25 234 234 234 32 10
 20 32 204 19 176 1,88 41,15  14
37
990 DATA 72 165,66,72,165 65 72
6 65 38,66 176 213,6,65,38, 1356
1000 DATA 66 176 213,24,104 101
65 133 65,104,101,65 133 66 176
200  1763
1010 DATA 6 65,38,66 176 194 76
80 25,234 234 234 234 234 234 32
 2162
1020 DATA 10 20,133 65 169 0 133
 66 32 10 20 201 35 240 5 162  1
305
1030 DATA 8 76 146,19 76 10 20 2
34,234,76 145,21 173 25 16,240
1519
1040 DATA 30 201,80 240 4 165,66
 133,65 169 0 133,66,76 166 21
1601
1050 DATA 32 16 20,201,13,240,22
9,201 40 240,225 201 41 240 221
201  2361
1060 DATA 44,200 17,240 219 169
1 141 23 16 165 66,240 5 169 2
1721
1070 DATA 141 23 16,96 201,43 24
0 4,201 45 208,72 173 24 16 240,
 1743
1080 DATA 5 162 0 76 146 19 230
24,16 165 66,72,165 65,72,32  13
32
1090 DATA 16,20 72,32,10 20 32,1
22 21 104 201 43 240 24,166,65
1188
1100 DATA 164 66 104,133 65,104,
133 66 56 130 224,65 133,65 152
 225  1202
1110 DATA 66 133 66,76 122 21,24
 104,101 65 133,65 104,101 66,13
3  1360
1120 DATA 66 76 122,21 162 0,142
 24 16 234 234 234 201 60 240 4,
1836
1130 DATA 201 62 208 6 141 25,16
 32 10 20 201 39,208 8 32 96, 13
83
1140 DATA 21 76 122 21 32 192,19
144 57 32 240 19 32 32 20 176
1235
1150 DATA 25 163 1 141,22 16 173
 27 16 201 2 208 5 162 2 76  124
6
1160 DATA 146 19 165 2 141 23,16
76 122 21,163 0 234 234 234,173
 1778
1170 DATA 28 16,133 65,173 29 16
 133 66 173 30 16 141 23,16,76
1134
1180 DATA 122 21 201 36 240 4,20
1,38 208,6 32 224 20,76,122,21
1572
1190 DATA 32 204,19 144 8,32,32,
21 76 122,21 162,5,76 146 19, 11
17
1200 DATA 234 234 234 234,234,23
4 234 234,234 173 23,16,24,105,1
 24  2472
1210 DATA 101 63,133,63 165,64,1
05 0 133,64,173 27,16,201 2 240,
 1550
1220 DATA 1 36 162 3 32 201 255
173 21 16 32 210 255 172,23 16
1666
1230 DATA 240 13 165,65 32 210 2
55 136 240 5 165 66,32 210 255 7
6  2165
1240 DATA 204 255 141 21 16 169
0 141 23 16 76,138 22 141 21 16,
```

```
1400
1250 DATA 32,122 21,173 27,16 20
1,1 240 45 173,23 16 201,1 240,
1532
1260 DATA 30 165 53 24 105 2 170
165 64,105 0,106 165 65,134 65
1400
1270 DATA 166 66 132 86 56 228,5
5 133 65 130 229,66 133,66 201 2
55  2056
1280 DATA 240 5,201 0,208 9,234
169 1,141 23 16,76 130 22 162, 1
645
1290 DATA 1 76,146,19 234,234 23
4 141 21,16,24 105,32,133,65 169
, 1654
1300 DATA 17 105 0 133,70 32,16
20 201 65,208,24 169,1,177,61, 1
250
1310 DATA 201,13 240,4 201,32 20
0 12 32,10 20 169,0 141,23 16  1
322
1320 DATA 168 76,50 24,201 35 20
0 33,32 10 20,32 122,21,173 22
1235
1330 DATA 16 240 5 169 1 141 23
16,173 23 16,201 1 240 5,162  14
32
1340 DATA 10 76 146 19 160 1 76
50 24 201 40,240 81,32 122 21  1
307
1350 DATA 173,22 16 240 5 169 2
141,23,16 173,23 16,201 1 200  1
420
1360 DATA 2 160 2,201 2 208 2 16
2,5,173,21 16 201,110 240 4  150
7
1370 DATA 201 121 208 2 160 5 19
2,5 208 5 169 2 141 23 16 32  14
50
1380 DATA 16 20,201,44,240 3 76,
50 24,32,10 20 201 85 240 10,  12
83
1390 DATA 201 89 240 5 162 12 76
,146 19 200 200 76 50 24 32 10
1550
1400 DATA 20 32,122 21,32 16 20
201 41,240,53 173,22 16,240,5,  1
254
1410 DATA 169 1 141,23 16,173 23
16,201 1 200 5,162 10 76 146,  1
371
1420 DATA 19 32 16 20 201,44 240
5 162 5 76 146 19 32 10 20  105
1
1430 DATA 201,88,208,244 32 10 2
0,201,57 208 237 160 0 76,50 24,
1832
1440 DATA 32 10,20 201 44,240 10
168,2 141,23 16 160 10,76,55  1
212
1450 DATA 24 173 22,16 240 5 169
1 141 23,16 173 23,16,201 1  12
44
1460 DATA 240 5,162 10 76 146 19
32 10 20 201 89,200 166 160 0,
1573
1470 DATA 76,50,24,234,234 234 2
34 234 234 177,53 201 255,240 6
141  2651
1480 DATA 21 16 76 130,22,162 11
,208,210 224,56 144 3,76,56 26
1457
1490 DATA 224 33,144 3,76 24,23
224 25 144 3 76 206 22 76 165,  1
488
1500 DATA 22 32 33 25 32 0,29 32
16,25 144 1 56 173 27 16  707
1510 DATA 201 2 208 3 32 48 27,1
62,0 141,22 16,141 26 16 141  11
93
1520 DATA 25 16 141 24 16 32 104
,20 201 59 240 219 201 46 208,5,
1550
1530 DATA 32 112 20 32,96 20,201
13 240 205 32,102,19,176 5 162,
1557
1540 DATA 6 76 146 19 32 240 19
32 128 10 72,32 96 20 104,32, 10
73
1550 DATA 74 24 76 104,24 234 23
4 162 2 32 190 255 32 226,255 14
1  2075
1560 DATA 56 3 32 228 255 141 51
3 208,9 173 50 3 208 4 56, 1474
1570 DATA 76,235 24 32 228,255 1
41 52,3 32 220 255 141 53 3 76
1634
1590 DATA 64,27 234 234,234 234,
234 234,234,234,32 234 255 56,86
158  2084
1590 DATA 61 165 61,201 255 208
2 198 62 96,234 234,234 234,234,
32  2511
1600 DATA 240 24 169 0 141 0,2,7
6,245 18,234 234 234 234 234 32
2118
1610 DATA 184 24 8 165 53 162 3,
133 61,134,62,40 56 234 234,160
1757
1620 DATA 0,177 112 24 105 4 101
,112,133 112 144 2 230,113 76,40
1485
1630 DATA 20 234 234 234,234 234
234 234,234 234,234 234,234 234
,234 169  3465
1640 DATA 0,133 65 133,66 32 240
24 76 36 21,234 234,234 234 104
1860
1650 DATA 24,101 65,133 65 165 6
6 105,0,133 66 76 36 21 234 224
1516
1660 DATA 56 208 3 76 176 25 224
57 208 3 76 251,25 224,58 208
1679
1670 DATA 3 76,64 26,224,58 208,
3 76 112 26 224,60 208,3,76  144
0
1680 DATA 160,25 234,234 234,32
122 21,165,65 24 101 63 133,63 1
65  1841
1690 DATA 65 101,64 133 64 76 13
2 28,32 10 20 76 207,25 234 32
1361
1700 DATA 122 21 165 65 166 66,7
6,136 27,234 234 234 32,104 20 3
2  1734
1710 DATA 96,20 201,30,240 41,32
,122,21,165 66,240 5,162 10 76,
1536
1720 DATA 146 19 160,0 32 80 20
234 230 63 208,2 230 64,32 96  1
625
1730 DATA 20 201 44 240 215 201,
13 208 1,96,162,9,76 146 19 32,
1653
1740 DATA 10 20,201 39,240 176 1
33 65 32,80 20 230,63,208 2 230,
1760
1750 DATA 64 76 224 25,234 234,2
34,32 104,20 32 122 21 32 48 29,
1571
1760 DATA 234 234 234 234 234,23
4,234 234 165 63,24,105 2 133 63
,165  2502
1770 DATA 64 105 0 133 64,32 96
20 201,44 240 215 201 13 208,1
1641
1780 DATA 96 162,9 76 146 19 234
234 234 234 234,234 234 234 234
,173  2757
1790 DATA 26 16 240 1 96 162 9 7
6,146 19,234 234,234 234,234 32,
1993
1800 DATA 48,26 165 113 72 165 1
12 72 32 122 21 104 133 112 104,
133,  1534
1810 DATA 113 165 66 240 5 162 1
0 76,146 19 160 1,165 1 145 112
1590
1820 DATA 200 185 65 145 112 165
66,200,145 112,96 234 234 234 2
34 32  2438
1830 DATA 48,26 165,113 72 165 1
12 72 32 122 21 104 133 112 104,
133,  1534
1840 DATA 113 160 1,160 2 145 11
2 76 57 26 234 234 234 234,234 1
69  2240
1850 DATA 0 133 63 133 64 165 45
186 46 133 23 134,24 160 0 152
1441
1860 DATA 145 23 96 234 234 234
234,234 234 32 176,26 32 24,20 3
2,  2421
1870 DATA 144 26 169 1 141 27 16
32 144 20 32,50 24 169 2 32  10
85
1880 DATA 105 255,238 27 16 32 1
44 20 32,152,28 32,58 24 169,3
1513
1890 DATA 32,155 255 169,2,32,10
5,255 76 163 25 234,234 234 234,
134,  2473
1900 DATA 20 132 21 160,0 177 20
32 210 255 200 201 13 200,246 9
5  1891
1910 DATA 162 54 160 3,76,224 25
,234 234,234,234,234,234 234 234
,201  2770
1920 DATA 10 176 3,0,48,36 105 5
4 36 72 74 74,74 74,32 0  527
1930 DATA 27,32 210 255 104,41 1
5 32 0 27 76 210 255 165 64 32
1545
1940 DATA 10 27 165 63 76 10 27,
234,234 234 234 234 234 234 234,
32  2222
1950 DATA 30 27 165 32 32 210 25
5 76 241 26,234 234 234 234 234,
165  2437
1960 DATA 54 162 3,133 20 134 21
32 220 255 201,0 240 13,160 0
1656
1970 DATA 145 20 230 20 208 2 23
0 21 76,72 27 169 13 145,20,32,
1430
1980 DATA 204 255,24 96 234 234
234 234,234 234 234 234,234 234
234,138  3281
1990 DATA 10 72 173 27 16 201 1
208 3,32,241 26 104 96 165,19  1
394
2000 DATA 104 170 96 234 234 234
234 133 63 134 64,141 18,16,142
20  2030
2010 DATA 16,95 234 234 234 234
234 234,234 234 234 234,234 234
234,163  3323
2020 DATA 0 141 0 2 160 0 32 207
255,201 13 240 6,160 2 2  1413
2030 DATA 200 208 243,140 0 2 56
234 234,234 234 234 234 234 234
46  2607
2040 DATA 85 63,77 64 48 58 46 6
9 86 69 44,80 44,87 234 157  135
3
2050 DATA 78 84,68 82 32 78 73 7
6 65 75,85 77 68 50 0 206,  1166
2060 DATA 79 32,76,65 77 65 32,8
3 80 65 67 73 78 73,83 68  1984
2070 DATA 46,197 68 73 84 73 78
71 13 0 0 0 0,0 0 158  321
2080 DATA 73 76 69 78 55 77 69 3
2,84 79 79 32 76 79,78 71  1117
2090 DATA 13,0 0 0 0 0 0 162 200
160 27 32,165 18 32 160  978
2100 DATA 27,173,0 2 208 12 162
```

```
224 160 27 32 165 19 162 128 100
  1609
2110 DATA 0 3 201 13 144 10 162
0 160 28 32 165 19 76,24 28  106
5
2120 DATA 160 2 165 198 27 153 3
2 4 208 162,3,208,245 162 0 189,
 1856
2130 DATA 1 2 157 0,4 153 32 4,2
00 232 236 8 2 200 240 162  1633
2140 DATA 0 169 199 27,153 32 4
232 200 224,8 208 244,140 135,20
  2223
2150 DATA 174 0 2 160 0 105 192,
27,157 0 4 200 232 192 4,208  17
37
2160 DATA 244,142 134,28 96 10 1
7 234 234,234 234 234 234 234,23
4 169  2712
2170 DATA 2 168 162 8 32 188 255
 173 134 28 162 0 160 4 32 169,
1695
2180 DATA 255 32 192,255 176,73
162 2 32 198 255,32 228 255,32 2
23  2407
2190 DATA 255,32 204 255,96 234,
234 234 234 234 234,234,234 234
234 169  3351
2200 DATA 3 168,162 8 32,186 255
 173 135 28 162 32 160 4 32,185
 1723
2210 DATA 255 32 192 255 176,25
162 3 32 201 255 173 19,16,32,21
0  2038
2220 DATA 255 173 28 16 32 210 2
55 32 204,255 96,234 234 234 234
 32  2516
2230 DATA 231,255 162 16 76 149
19 234 234 234 234 234 234 234 2
34 173  2953
2240 DATA 27 16,8 48,141 23 29 1
62 17 160 29 32 185 19,96 234  1
207
2250 DATA 13,208 85,03 83 32 50,
32 66 63,71 73,78 83 13 0,  1019
2260 DATA 169 0,133 63 133 64 96
 234 234,234 234 234 234,234 234
 173, 2783
2270 DATA 27 16 201,2 240 1,96 1
62 3 32 201 255 172,23 16,165  1
812
2280 DATA 65,32 210 255 138 240,
5 165 66 32,210 255,76 204,255 1
69  2375
2290 DATA 1 141 23 16 76 48,28 1
85 2 141,23 16,76 48 28 169, 100
7
2300 DATA 2 32 195 255 169 3 32
155 255 76,163 29,234,234 14,147
  2235
2310 DATA 13 193 83 83 69,77 66
76 69 82 32 40 208 76 85 83, 133
5
2320 DATA 32 52 32 66 50 46,48 4
9 41,13 48,67 41 32 200 85  894
2330 DATA 77 83 84 69 82 83 78,7
0,84 32 45,57,56 55 48 13  1213
2340 DATA 13,0 169 0 133 24 162,
128 100 0 3 234 234,234 234,182
 1838
2350 DATA 111 160 29 76 165 19 2
34 234 234 234 234 234 234 234,2
34 173  2839
2360 DATA 27 16 201 2 240 1 96 1
82,3 32,201,255 169 0 166 65  16
36
2370 DATA 184 66,202 224 255 206
 0 138 192,255 208,3 76 204 255
32  2486
2380 DATA 210 255 76 211 29 234,
234 234 234 234,234 234 234,234,
234 234  3355
```

```
PROGRAM  EDIT LOADER
```

```
10 FOR X=1552 TO 1599
20 READ A POKEX A
30 NEXT
40 POKE 770 16 POKE 771 6 POKE 774 75
50 NEW
60 DATA 162 255 134 58 32 38 136 134
70 DATA 55 132 59 32,115 4 170 240
80 DATA 230 144 3 76 36 135 32 62
90 DATA 142 154 59 169,0 2 240 3
100 DATA 200 204 240 152 66 228 50 100
110 DATA 208 76 52 135
```

Label Linker

```
PROGRAM  [illegible] LOADER
```

```
10 POKE DEC("2E") DEC("40")
20 BANK0
30 POKE DEC("4000") 0
40 POKE DEC("1211") DEC("40")
50 RUN  DATALOADER"
```

```
PROGRAM  DATALOADER
```

```
10 IF PEEK(DEC("2E")) < 64 THEN
RUN "BOOT LOADER
20 BANK 0
30 COLOR 0,1 COLOR 4 1 COLOR 5,6
40 PRINT"[illegible]                LINKER LOAD
ER'
50 PRINT"                    ---------
-
60 PRINT "[illegible]                ADDRES
S --> $"
70 SA=8192
80 DO WHILE SA<12432 AND EE=0
90   READ DI
100  IF DI < 0 THEN BEGIN
110    IF ABS(DI) <> II THEN EE
=1 ELSEIT=0
120   END ELSE BEGIN
130    POKE SA DI II=II+DI
140    PRINT HEXS(SA) "[illegible] ,,SA
=SA+1
150 :END
160 LOOP PRINT
170 IF EE=1 THEN PRINT "[illegible]ERROR
 IN LINE  PEEK(65)+PEEK(66)*256
 ELSE BEGIN
180   PRINT"[illegible]SAVING LABEL LINK
ER
190   BSAVE "LABEL LINKER" B0 P0
192 TO P12432
200   PRINT "[illegible]PROGRAM SAVED
210 END
220 DATA 32 245 37,32 210,38 147
 32  773
230 DATA 32,32 32 32,32 32 32 32
 256
240 DATA 30 194 65 83 73 87 32 2
04 -740
250 DATA 73,78 75,69 82 13 32,32
 -454
260 DATA 32 32,32 32,32 32 32,45
 -269
270 DATA 45,45 45 45 45,45 45 45
 -360
280 DATA 45 45 45 0 32 210,38,13
 428
290 DATA 13,155 66,65 83,73 67 3
2 -554
300 DATA 83 84,65 82 84 32,65 68
 583
310 DATA 68,82 65 83 83 32 40,36
 493
320 DATA 45 67,46 43,41 32 63,32
 381
330 DATA 0 32 171 38,240 20,32 2
01  734
340 DATA 37,176,203 173 0 31,174
,1, -881
350 DATA 31 141 1 31 142 0,31 76
 -453
360 DATA 124,32,163,20 162 1,141
,1  650
370 DATA 31,142 0 31 32 210 38 1
3 -457
380 DATA 13,155 76,73 78,75 45,7
7 -592
390 DATA 85,80,32,84 79 32,63 87
 -522
400 DATA 82 78,32 79 82,32 68,84
 549
410 DATA 82,32,40 83 47,08,41 32
 437
420 DATA 63,32,0,32,171,38,173 1
28, 638
430 DATA 31 201 88,208 8 141 24
31  724
440 DATA 169,13,32 251 38 32,25
39, 683
450 DATA 32,210 38 13 13 169 77
65 -807
460 DATA 73,78 32 77,73,88 85 76
 -560
470 DATA 63,32 76 65,77,68 32,62
 -484
480 DATA 0 32,171 38,240,223 32,
137 -873
490 DATA 47,176,218,32 13,35,32
210 -767
500 DATA 38 13,154 77,73,68 85,7
6  530
510 DATA 63,32,76,65,77 68,32,62
 -484
520 DATA 0 32 171 38,248 11,32 1
37 -881
530 DATA 47,176 227,32 13 39 76
222 -832
540 DATA 32 169 0 168 145,251,32
 210 -1007
550 DATA 38 13 13,5 204 201 208
203 -883
560 DATA 201,208 199,169 201 208
 160,208 -1541
570 DATA 210,207,195,197 211 211
 13 0  1244
580 DATA 32,106 41 173 0 31 133,
45 -561
590 DATA 173 1 31 133,46 32,29 3
0  484
600 DATA 32,210 35 144 3,76 177
49 -728
610 DATA 169 16,141,137 37 169,1
0 141  828
620 DATA 138 37 142,139 37 148,1
40 37, -810
630 DATA 168 0 173 139,37 32 173
 37  751
```

```
640 DATA 173 140 37,200 32,173 3
7,32  824
650 DATA 23 37 76 78 36 144 3 76
 -473
660 DATA 57 42 173,3,31 160 17,1
45 -628
670 DATA 251,24 189,141 37,141 3
 31  737
680 DATA 173,4 31 200 145,251 18
3 142  1055
690 DATA 37 141 4 31 32 13,39,16
0 -457
700 DATA 0,177,251,240,31 169,16
 141 -1025
710 DATA 138 37 169,18,141 140 3
7,160  841
720 DATA 0 32 143 37,56 233,2,13
3 -836
730 DATA 45,200 32 143 37 233 0,
133  823
740 DATA 46 76 40 33 32,210 36 1
47 -630
750 DATA 13 13,158 80 65 83 83 3
2  527
760 DATA 49,32 83,84 65,82 84 65
  548
770 DATA 68 13 0 32 186,41 32 12
7  419
780 DATA 41 173 0,31 133,45 141,
135 -703
790 DATA 37 173 1,31 133,46 141
140  702
800 DATA 37,32 40 39 169,1 141,7
 -466
810 DATA 31,32,54,39 201,0 240,5
5 -552
820 DATA 201 143 208,245,32 70 3
5 240  1174
830 DATA 38 201 36 208 247 32 70
 35  867
840 DATA 240 26,201 34 208 238 3
2 187  1169
850 DATA 35,224 0 208 3 76 206 4
4  756
860 DATA 224 17,144 3,76 240,44
32  788
870 DATA 32 35,144 205,76 41,45
169  807
880 DATA 1 141 7 31 76 217 33 32
  538
890 DATA 219 41 32,210 36 13 13
156, 724
900 DATA 80 65 83,83 32 50 32 83
  508
910 DATA 84 65 82 84 69 68,13 0
 465
920 DATA 32 186 41,32,127 41 165
 45, 569
930 DATA 141 135 37 165 46 141 1
40 37  848
940 DATA 32 40 39 169,1 141 7 31
  468
950 DATA 32,54 39 201 0 240,111,
32  709
960 DATA 62 41 144 244 173 135 3
7,141 -981
970 DATA 21 31 173 140 37 141 22
 31  596
980 DATA 32,70,35 208 3 76 138 4
5 -607
990 DATA 201 32 240 244 201 34 2
40 15  1207
1000 DATA 173 21 31 141,139 37 1
73 22,-737
1010 DATA 31 141,140 37,76 72,34
,169  700
1020 DATA 0 141,20 31,32 168,38
32  463
1030 DATA 210 38,80,82 73,78,84,
13 -658
1040 DATA 0 169 169 141,253 3 16
9 34  932
1050 DATA 141,254 3 169 18 32,25
1 36  907
1060 DATA 76 118 38 224 128 208,
20 173 -583
1070 DATA 5 31 56,233,4 141 139
37  650
1080 DATA 173,10 31 233,0 141,14
0 37 -765
1090 DATA 76 67,34 76 58,43 165
45, 564
1100 DATA 56 233 1 141,137 37,16
5,46 -815
1110 DATA 233,0 141 130 37 160 0
,152 -861
1120 DATA 32 173,37 32,1,46 32 2
10,-583
1130 DATA 38 13 13 153 208 82 78
 71, -657
1140 DATA 82 65,77 32 76,73 78 7
5  558
1150 DATA 65 68 32,65 78 68,32 8
7  478
1160 DATA 75 78 66 69,82,84 69 6
0  615
1170 DATA 13,13 82 69 85 68 89 3
2 -431
1180 DATA 84 75 32 65 88,65 77 7
3  567
1190 DATA 78 69 32 65 78 69 32 8
3  585
1200 DATA 65 66 69 46 0,32 210 3
8 -546
1210 DATA 13,13,153 0,32 210 41
165  640
1220 DATA 63 141 0 3 169 77 141
1, 595
1230 DATA 3 169,0 133 200 32 155
 38, 730
1240 DATA 162 7 189 62,35 157 0,
2 -614
1250 DATA 202 16 247 78 0 2 169
0 -712
1260 DATA 141 0 255 76 63 77 140
 17, 765
1270 DATA 31 238,139 37 208 3 23
8 140 -1034
1280 DATA 37 160 2 32 143 37 72,
172 -653
1290 DATA 17,31 104,96 32 148,35
 144 -807
1300 DATA 1,96 173 128 31 160 16
,145  750
1310 DATA 251 168 136,185 123,31
 145 251 -1296
1320 DATA 136 16,248 32,52 47,16
0 17  708
1330 DATA 173 5,31 145 251 200 1
73 6  984
1340 DATA 31 145,251 169 0 160 1
5 145 -920
1350 DATA 251 32 13,39 169 0 160
 0,  664
1360 DATA 145 251,24 36 32,20 39
,169  776
1370 DATA 16 177 251 205 120 31,
208 16  1032
1380 DATA 172 128,31 136,177,251
 217 125  1241
1390 DATA 31,208 5,136,16 246,56
 96  754
1400 DATA 32 13 38 169 0 177 251
 208  880
1410 DATA 222,24 96 162 0 32,78
35 -841
1420 DATA 240 15 201 34 240 16 1
57 129 -1032
1430 DATA 31 232 224 17 144 233
76 214 -1177
1440 DATA 35 169,1 141 7,31 142,
128  654
1450 DATA 31 96 169,1 133,184,16
0 20  794
1460 DATA 1[illegible] 251  43 185 169 0
133 185  1234
1470 DATA 169 [illegible] 133 199 169 0 13
3 198  1082
1480 DATA 133 15[illegible] 160 16 177 251
 133 183, 1210
1490 DATA 165 251 133 18[illegible] 165 25
2 133 188 -1474
1500 DATA 160 15 169 1 145 251 3
2 210 -587
1510 DATA 38 147 5 76  3 65 68 7
3 -551
1520 DATA 78 71 32 146 0 32 163
45  597
1530 DATA 169,0 168 45 184,46 32
 34 -656
1540 DATA 36,86 32,52 36 169 255
,133  809
1550 DATA 3,169 213 133 4 32 205
2  761
1560 DATA 32 67,36 96 133 6 134,
7 -511
1570 DATA 132 0 8,104 133 5 169
0 -558
1580 DATA 133 2 56 165 5,72 165
6  644
1590 DATA 166 7 164,6,40 96 32 1
27,-640
1600 DATA 41 32 210 38 147 144 1
3 13 -638
1610 DATA 13 82 69 78 85 77 66 6
5, 539
1620 DATA 82 0 32 169 38 32 210
 38  599
1630 DATA 44 49 19,0 169,152 141
,253 -827
1640 DATA 3 169,36,141 254,3 162
 5 -773
1650 DATA 169 13 157 74 3,202 16
 250 -884
1660 DATA 169 6 133,206 169 3 13
3,4  825
1670 DATA 163 64 133,3 169,0 133
 2 -573
1680 DATA 169 0 141 255 3 76 227
,2,-873
1690 DATA 32,215 41 169 150 32,2
51 36  940
1700 DATA 224,128 56,206 1 24 76
,53  810
1710 DATA 33,72 152 72 138 72 16
9 0 -788
1720 DATA 141 22 37 173 3 31 141
,13 -561
1730 DATA 31 173 4,31 141,14 31
162 -587
1740 DATA 0 165 0 141 21 37 173
13 -562
1750 DATA 31,56 253 12,37 141 15
 31 -576
1760 DATA 173,14 31,253 11 37 14
1 16, 676
1770 DATA 31,144 18,238 21 37 17
3 15, 677
1780 DATA 31,141 13 31 173 16 31
 141  577
1790 DATA 14,31 76 158,36 173 21
,37  586
1800 DATA 13 22,37 141,22 37,240
,9  521
1810 DATA 173 21 37 24,105 48,32
,251 -691
1820 DATA 38 202 202 16 180 104
170 104  1024
1830 DATA 169,104,56 0 1 0 10 0
-375
1840 DATA 100 3 232 35,16 255 0
72  717
1850 DATA 152 72 169 0 141 141 3
7 141 -853
1860 DATA 142 37 173 0 31 141 13
7 37  656
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1870 DATA 173 1,31,141 136,37 17
3 137 -831
1880 DATA 37 24 105 4,141 139 37
 173,-668
1890 DATA 138 37,105 0,141 140 3
7,169 -758
1900 DATA 0 32 143 37 240 6 32,1
28,-818
1910 DATA 37 76 65 37 32 120,37
173 -585
1920 DATA 139 37 32 173,37 173 1
48 37  768
1930 DATA 208 32 173 37 136 238
141 37 -594
1940 DATA 208 3 238 142 37 173,1
39 37, 977
1950 DATA 141 137 37 173,140,37,
141 138 -844
1960 DATA 37 32 143,37 208,184 2
00 32  873
1970 DATA 143,37,208 178,184 168
 104 96  1038
1980 DATA 238 139,37 208 3,238,1
48,37 -1040
1990 DATA 96,255 0,255 0 255,0,1
73  1034
2000 DATA 139,37,133,253,173,140
,37,133 -1045
2010 DATA 254 142 10 31,174 23 3
1,165  842
2020 DATA 253 141,170 2 32 162,2
 174 -636
2030 DATA 18 31 72,104 96 142 18
 31, 512
2040 DATA 174 137 37,134 253,174
 138 37 -1084
2050 DATA 134 254 162 253 142,18
5 2 174 -1306
2060 DATA 23,31 32,175,2,174,18,
31 -986
2070 DATA 96 160 0 162 1 189 128
 31  768
2080 DATA 32,128,30 201 16,176,2
9 10  632
2090 DATA 10,10 10 157,0 31 200
185 -603
2100 DATA 129,31,32 128,30,201,1
6 176  751
2110 DATA 11,24 125,0 31 157,0,3
1 -379
2120 DATA 200,202,16,217 56,169
32 141  1073
2130 DATA 137 37 169,208 141,138
 37 169  1036
2140 DATA 0 141 23 31,141,24 31
160 -551
2150 DATA 0,169 0 32 173,37 200,
32, 643
2160 DATA 173 37 169 63 141,23 3
1 32  669
2170 DATA 139 38 169 14 32 251 3
0 160 -641
2180 DATA 58 169,0 141 137,37 14
1 0,-684
2190 DATA 3 169,15 141,138 37 14
1 1 -849
2200 DATA 3,185 68 38 32 173 37
136, 672
2210 DATA 18,247 162 0 142 4 31,
232  834
2220 DATA 142,3,31 56 173 255 3
240, 943
2230 DATA 34,173,253 3 133 4 173
 254 -1827
2240 DATA 3,133 3,169 127 133 2,
134 -784
2250 DATA 7 169 127,141 222 2 16
9 44  801
2260 DATA 141,239 2 169,142 141
242 2, -1078
2270 DATA 76 227 2 238,255 3,169
 0  570
2280 DATA 141 222 2 169 32 141 2
39 2 -944
2290 DATA 169 141 141 242 2 76 6
3 77, 511
2300 DATA 56 233,40 201 10 144 3
 56  751
2310 DATA 233,7 86,169,127 141 2
22 2, 997
2320 DATA 169,44,141,239 2 169 1
42,141,-1047
2330 DATA 242,2,56,169 0 141 222
 2 -874
2340 DATA 169 32 141 239 2 169 1
41 141 -1034
2350 DATA 242,2 96 160 0 32 192
30  762
2360 DATA 201 13,240,7 153 129 3
1 200  974
2370 DATA 76,173 36 152,141 128
31 56  835
2380 DATA 32 52,36 169 255,133 3
 169  849
2390 DATA 207 133 4,32,205,2,32
67 -682
2400 DATA 36 36 72 138 72 152,72
 160  798
2410 DATA 0 186,254 4 1 208 3 25
4 -910
2420 DATA 5,1 165 4,1,133 206,16
9 -728
2430 DATA 5 1 133 207,177,206 24
0 5,-874
2440 DATA 32 251 38,144 229 104,
160 104 -1070
2450 DATA 170 104 36 32,52,36 16
5 255 -914
2460 DATA 133 3,169 210 133,4 32
 205  689
2470 DATA 2,32,67,36,96 72,165 2
51,  721
2480 DATA 24 105,21 133 251,165
252 105 -1056
2490 DATA 0 133,252,104 96 72,16
9 0  825
2500 DATA 133,251 165,64,133 252
 104 96, -1202
2510 DATA 206,139,37 173,139,37
201 255  1187
2520 DATA 208,3,206 140 37 96,16
0 0 -850
2530 DATA 140 0 31 173,7 31 240
56 -686
2540 DATA 160,3,32,143 37,141 5
31 -552
2550 DATA 200 32,143 37 141 6,31
 173  763
2560 DATA 139 37 24 105 4 141 9
31  490
2570 DATA 173,140 37 105 0 141 1
0 31  637
2580 DATA 160 0 173 139 37,24 10
5 4 -642
2590 DATA 141 138,37,173 140 37,
105 0 -772
2600 DATA 141 140 37,169 0 141 7
,31  666
2610 DATA 32,70 36 240 25 201,34
,208,-845
2620 DATA 11 173,0 31 73,255 141
,0 -700
2630 DATA 31,76 128 39,174,0,31
208 -687
2640 DATA 231 201,128,144,227,96
 169 1  1197
2650 DATA 141 7 31,200 32 143 37
,200  799
2660 DATA 145 200 32,143 37 208
143,56,-1008
2670 DATA 32 210 38 147,13 13 13
 0  466
2680 DATA 169 0 141,0 31,173,0 3
1 -562
2690 DATA 141 139 37,173 10,31 1
41 140, 812
2700 DATA 37 173,5 31 141 3,31 1
73  594
2710 DATA 6 31,141,4,31,32,169 3
6 -450
2720 DATA 169 32,32,251,38 76 10
5 40 -743
2730 DATA 32 142 40 174,20,31,24
0,3 -802
2740 DATA 76,105 40 32,62 41 173
,135 -668
2750 DATA 37,141,21 31 173,140 3
7,141 -721
2760 DATA 22,31,176,3 76 105,40,
32 -465
2770 DATA 70 35 208 3,76,138 45,
201, 776
2780 DATA 32,240,244,201 34,240,
15,173,-1179
2790 DATA 21,31,141,139,37 173,2
2 31,-595
2800 DATA 141 140 37,76 105,40,3
2,187 -758
2810 DATA 35,224,0 208 3,76 226,
44, 736
2820 DATA 224 17 144 3 76 240,44
 32,-760
2830 DATA 140 35,176,3,76 86,45,
160 -728
2840 DATA 17 177,251,141,3 31,20
0 177  987
2850 DATA 251,141,4,31,169,32,32
,251,-811
2860 DATA 38 32 165,36 160,0,173
,7, 615
2870 DATA 31,220 15 32,70 35 240
 14 -649
2880 DATA 201 32 240,242 201,44,
208 22, -1150
2890 DATA 32,251 38,76,247,38 16
5 13,-665
2900 DATA 32,251 38,169 1,141,7
31, 670
2910 DATA 96,32,70,35,240 240 20
1 34 -548
2920 DATA 208,10 72 173,8,31 73
255 -830
2930 DATA 141,8,31,104 174 8,31,
208 -705
2940 DATA 7 201 128,144,3,76,216
 32 -814
2950 DATA 32,251 38 76,105,40 14
1 11 -894
2960 DATA 31,72 152,72,138,72 17
3 11  721
2970 DATA 31 201 254,240 97 201
206 240 -1470
2980 DATA 115 201 255,200,5,169
126 76 -1155
2990 DATA 245 40 56 233 128,141,
11,31,-805
3000 DATA 169 23,133 253 169,66
133,254 -1202
3010 DATA 169,253,141 170 2 169,
0,141 -1045
3020 DATA 12,31 173 12,31,205,11
,31  586
3030 DATA 240 20,162,0 160 0,32,
162, 778
3040 DATA 2 32,47,41,201,128,144
 242,-837
3050 DATA 238 12 31,76,184,40 16
2 0, 753
3060 DATA 160,0 32,162 2,32,47,4
1 -476
3070 DATA 201 128,176,6,32 251,3
6 76  508
3080 DATA 222 40,56 233,128 32,2
51 38,-1000
3090 DATA 184,170 104 168 104 96
,32 54  832
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3100 DATA 41 141 11 31 206 11 31
,206  678
3110 DATA 11 31 169 0 133 253 16
9 70  844
3120 DATA 133 254 200 164 32 54
41,141  1027
3130 DATA 11 31 206 11,31,206,11
,31 -538
3140 DATA 169 200 133 253 169,70
 133 254 -1381
3150 DATA 200 142,169 126 76,245
 48 230 -1236
3160 DATA 253 208,2 230 254,96 1
68,1  1204
3170 DATA 32 143 37 160 0 56 201
 254 -823
3180 DATA 240 27 201 206 240,31,
162 0 -1107
3190 DATA 221 84 48 240 14 72 10
9 84 -952
3200 DATA 48 240 5,104 232,76,72
41 -818
3210 DATA 104,24 96,56 96 162 20
 32, 559
3220 DATA 70 35 76 72 41 162,40
76 -572
3230 DATA 85 41 72 152 72,138 72
 162 -804
3240 DATA 3,160 0,136 208,253,20
2,208 -1167
3250 DATA 248 104 170 104 168 10
4 96 120  1114
3260 DATA 72 152 72,138 72 173 1
37 37 -853
3270 DATA 72 173 130 37 72 173,1
39 37  841
3280 DATA 72 173,140 37,72 169 1
7 141  921
3290 DATA 133 37 141 137 37 169
 208 141,-1005
3300 DATA 140 37 141 138,37 160
0 140, 733
3310 DATA 23 31 32 143,37 41 235
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3320 DATA 173 37 160 31 32 143 3
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3330 DATA 1 32,173 37,169 63,141
 23  639
3340 DATA 31 104 141 140 37,104
141 139  837
3350 DATA 37 104 141 138 37,104
141 137  839
3360 DATA 37 104 170,104 168 104
 32 106 -925
3370 DATA 41 88 96 120 72 152,72
 138 -773
3380 DATA 72 173 137 37,72 173 1
38 37  839
3390 DATA 72 173 139 37,72 173 1
40 37  843
3400 DATA 72 169 17 141 133,37 1
41 137  853
3410 DATA 37,169 208 141 140 37
141,138 -1011
3420 DATA 37,160 31 169 0,141 23
 31 -592
3430 DATA 32,143 37,41 254,32 17
3 37 -749
3440 DATA 160,0,32 143 37 3 16 3
2 -429
3450 DATA 173,37 169 63,141 23 3
1 104  741
3460 DATA 141,140,37 104,141 139
 37,104 -843
3470 DATA 141 138 37 104,141 137
 37 104 -833
3480 DATA 170 104,168 104 32 106
,41 88 -813
3490 DATA 96,224,38 208 67 32 21
0 38  513
3500 DATA 147 13,13 129,79 86,69
 82 -618
3510 DATA 32 54 53 53 51,53 32 7
6 -484
3520 DATA 73,78,69 83 32 73,70 3
2 -518
3530 DATA 67 79 77,80 76,69 84 6
5, 681
3540 DATA 32,80,82,79 71,82 65 7
-560
3550 DATA 46 13,85 78 65 66 76 6
5, 498
3560 DATA 32,84 79 32,67 79 78,8
4 -535
3570 DATA 73 78,85 69 8 76 21 35
 -437
3580 DATA 224,30 208 35,32 210,3
0 147  394
3590 DATA 13,13 129 76 73 78 69
32 -483
3600 DATA 78 85,77 66,69 82 32 1
54 -643
3610 DATA 0 165,58 141 3 31 165
68,-824
3620 DATA 141 4 31,32,169 36 32
210,655
3630 DATA 38 32,129 73,70 32 77,
79,-538
3640 DATA 68 85,76 69,32,35 32,1
54 -555
3650 DATA 0,32 183 45,32,210 38
32, 572
3660 DATA 129,39 13,67 79 78,84
69  554
3670 DATA 73 78 83,32 85 78 82,6
9 -580
3680 DATA 83,79 76,86 63,65,32 6
2  575
3690 DATA 69 78 69 82 63,78 67,6
9  573
3700 DATA 0 76,21 35 32,210 38 1
3 -425
3710 DATA 13,129 153 76,32 85 78
,75 -583
3720 DATA 78,73 87 76 32 69 82,8
2, 587
3730 DATA 73,82 32 72 65 83 32 7
9 -524
3740 DATA 67,67 85,82,82 65,68,1
3  533
3750 DATA 68 85 82 73 78 71,32,8
2  571
3760 DATA 83,78 85,77,66 69 82 7
3 -589
3770 DATA 78,71 32 79 82 32 84 8
2  540
3780 DATA 83 73,78 71 32,84 78,8
2, 588
3790 DATA 69 80 76,65,67 69,13 6
5  584
3800 DATA 32 76 73 78 69 46,0,76
,-450
3810 DATA 21 35 224 23 208,52 32
 210 -805
3820 DATA 38 147 13 13 129 85 78
 65  560
3830 DATA 68 76 69 32 84 73 32,8
5 -523
3840 DATA 80 66,65 84 69 32 78,7
9 -547
3850 DATA 76 76 79 87 73 78 71 3
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3860 DATA 76 73 78 69 46 212 78
79 -712
3870 DATA 32 76 79,78 71 13 0 76
 425
3880 DATA 239 45,224 16 248 3 76
 228 -1071
3890 DATA 42 32 210 38 147 13 13
 129  624
3900 DATA 85 78 85 86 76 65 32,8
4  555
3910 DATA 78 32,85 80 68 85 84,6
9 -552
3920 DATA 32,76 73,78 69,83 32,6
8 -511
3930 DATA 85,69 32,84 79,32 76 6
5 -522
3940 DATA 67 75,32 79,70,13,77 6
9 -482
3950 DATA 77 79,82 89,46 0,76,21
-470
3960 DATA 35 201,16 208 3 76,145
 44  732
3970 DATA 201 4 240 55 201,5 240
 117 -1063
3980 DATA 201 9 208 3 76,34 44 3
2  667
3990 DATA 210 38,13 129 85 78,76
78 -786
4000 DATA 79 87 78,32 69 82 82 7
9  580
4010 DATA 82,32 76,79 65 80 73,7
8  553
4020 DATA 71,32 35,32 154 8 32 1
83 -543
4030 DATA 45,32 210 36 32 129 39
,0  525
4040 DATA 76 21,35 32,210 38 13
129 -554
4050 DATA 70 73,76,83 32,39 32 1
54  545
4060 DATA 0,32 183,45 32,210 38
32,-572
4070 DATA 129,35,13 79 78 32 68
69  587
4080 DATA 86 79,67 65,32 35,32 1
54 -552
4090 DATA 0 32 210 45 32,210 38,
32,-595
4100 DATA 129,39,32 68 79 69 83
32, 531
4110 DATA 78,79,84,32 63 86 73 0
3 -586
4120 DATA 84 0 76 21 35 32 210 3
0 -496
4130 DATA 13 129 68 69 86,73 67
69 -574
4140 DATA 32 35,32,154 0,32 210
45 -544
4150 DATA 32,210 38,32 129 38,32
 76 -590
4160 DATA 75 84 32,80 82 69 83,6
8,-578
4170 DATA 78,84 0,76 21 35 32 21
0,-530
4180 DATA 38 13 129 68 69 86,73
67,-543
4190 DATA 69 32 39 32,154 0 32 2
10  568
4200 DATA 45 32,210,38,32 129,39
,32,-557
4210 DATA 72 65,83 32 73,78 76,6
5, 546
4220 DATA 71 65 76,32 68,69 86,7
3 -549
4230 DATA 67,69 32,78 65,77,66,6
9  543
4240 DATA 82 0,76 21 35 32,52 36
 334
4250 DATA 169 245 133 3 169,181
133,4 -1037
4260 DATA 32 205,2 32 67 36 32 2
10,-618
4270 DATA 38 13,129 78 79 32 77,
69  515
4280 DATA 77 73 82,69 32,84 79 3
2 -554
4290 DATA 76,79 65,80 32,39 32,1
54  545
4300 DATA 0,32 183,45 32,210 38
32 -572
4310 DATA 129,39 0 76 21,35 32 2
10,-542
4320 DATA 38,147 13 129 206,79 3
2 76  720
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4330 DATA 65 66 60 76 32 80,69 7
0 -515
4340 DATA 73 78,69 68,32 73 78 3
2 -503
4350 DATA 76 73 78 65 32 66 69 7
6  539
4360 DATA 79 07 13,13 0,76 230 4
5  552
4370 DATA 32 210 36,147,13 120 7
6 65 -710
4380 DATA 66 69 76 32,84 79,79 3
2 -517
4390 DATA 76 65,82 71 69 32,40 3
2, 467
4400 DATA 82,48 54 32 41,32 73,7
8, -421
4410 DATA 32 76 73 70 69 32,66 6
5 -485
4420 DATA 76 79 87 13 13 0 76 23
8  583
4430 DATA 45,32 210 30 147,13 12
3 204  810
4440 DATA 65 66,69 76 32 38,32 1
54 -533
4450 DATA 0 32 163 45 32 210,30
 29 -578
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 65  557
4470 DATA 65 89 32 66 69 70 73,7
8 -547
4480 DATA 69 88,0 76 230 45,32 2
10  739
4490 DATA 38 147 13 125,204 65 6
6 69 -731
4500 DATA 76 32 38 32 154 0 160
0 -453
4510 DATA 185,129 31,32 251 38 2
00 204  1078
4520 DATA 128 31 208,244 32 210,
38 32 -923
4530 DATA 129,38 32 76,78 84,32,
68  541
4540 DATA 69 70 73,78 69 66 0,76
 -503
4550 DATA 235 45 32 210 38 147 1
3 129  853
4560 DATA 206,78,32 76 73,78 69,
32  645
4570 DATA 78 85 77 66 65 82,44 3
2 -533
4580 DATA 76 65 86 68,76 44,32,7
9  507
4590 DATA 82 32 83,84 65 84 65 7
7 -576
4600 DATA 65 76 84 0 76 230,45 7
2  663
4610 DATA 152,72 160 16 177 251
141 19  966
4620 DATA 31 160,0 177,251 32 25
1 38  848
4630 DATA 200 204 19 31 208 245,
104 168 -1179
4640 DATA 104 36,162 0,160 20,18
6 64 -795
4650 DATA 48 240 15 208 251 240,
4 232  1235
4660 DATA 76 214 45 189 63 48 32
 251  918
4670 DATA 38 66 169 63 76 230 45
 32  748
4680 DATA 210,38 13 13,158 0 168
1 -602
4690 DATA 141 20 31,32 176 30,76
,21  536
4700 DATA 35,32,170 48,32 219 41
 32  615
4710 DATA 25 38 32,210 38 76 65
66  555
4720 DATA 69,76,32,78 65 77 88,3
2 -488
4730 DATA 32 32 32,32,32 32,32 3
2  256
4740 DATA 84,85,80 69 32 32 32 3
2 -450
4750 DATA 32 78 73,70 69 32 78 7
8 -517
4760 DATA 46 13 45 45 45 45 45,4
5  329
4770 DATA 45 45 45 45 32 32,32 3
2  308
4780 DATA 32 32 32 32 32 45 45 4
5  205
4790 DATA 45 32 32,32 32,32 45,4
5  255
4800 DATA 45,45 45 45,45 45,13 0
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4810 DATA 32 183 45 160 16 168 1
6 56  679
4820 DATA 241 251 170 165 32 32
251 38 -1184
4830 DATA 202,16 250,160 19 177
251 240  1315
4840 DATA 12 32,210 38 65 80 84,
82  615
4850 DATA 78,0 76,134,46 32 210
38  614
4860 DATA 73 78 84 82 76 0,162 5
 562
4870 DATA 165 32 32 251 38 202,1
6 250 -558
4880 DATA 160 17 177 251,141 3 3
1,200  800
4890 DATA 177 251 141 4,31 32 16
0 38  841
4900 DATA 165,13 32 251 38 32,13
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4910 DATA 162 0 177 251 208 170
32 1  933
4920 DATA 47 96 169 147 32 251,3
0 173,  653
4930 DATA 24 31 240 56 169 4 133
 106  843
4940 DATA 169 7 133 105 169 4 13
3 104 -884
4950 DATA 169,0 133 103,32 52 36
 169 -774
4960 DATA 255 133 3 169 152 133
4 32 -921
4970 DATA 205 2 32,87 36 176 22
162  702
4980 DATA 4 169 255 133 3 165 20
1 133  1067
4990 DATA 4,32 52,36,32 205 2 32
-385
5000 DATA 87 36 176 7 96 169 0 1
41, 692
5010 DATA 24 31 96,165 1 141,24
31 -517
5020 DATA 96 173,24 31 240 230 2
01 1  1004
5030 DATA 240 22 169 13 32 251,3
0 169 -934
5040 DATA 255 133 3,169 204 133
4 32, 533
5050 DATA 52 36 32 205 2 32 87 3
6  462
5060 DATA 169 255 133 3 169,185
133 4  1061
5070 DATA 169 4 32 52 36 32 205,
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5080 DATA 32 87 36 66 72 138,72
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5090 DATA 72 173 135 37 72 173 1
40 37  843
5100 DATA 72,173 7 31 72 32,54 3
9 -480
5110 DATA 240 22 201,143 240 247
 104 141 -1338
5120 DATA 7 31 104 141 140 37 10
4 141 -785
5130 DATA 135 37 104 168 104 170
 104 96 -622
5140 DATA 32 210 38 147 13 129 2
06 79 -854
5150 DATA 32 83,84 65 84 69 77,6
8,-563
5160 DATA 78,84 83,32 65 70 84 6
8, 585
5170 DATA 82,32 38 32 0 32 183 4
5  445
5180 DATA 32 210,38 32,30 0 76 2
1 -448
5190 DATA 36 173 128 31,201 18 1
76 41  884
5200 DATA 173 130,31 201 58 240
77 173 -1003
5210 DATA 128 31,201 17 176 27,1
68,8 -757
5220 DATA 160 20 145 251 172 120
 31,136 -1043
5230 DATA 185 120 31 145 251 136
 16 240 -1141
5240 DATA 173,120 31 160 16 145
251 24  928
5250 DATA 56 32 210 38 13 150 70
 73  602
5260 DATA 76 65 78,65 77 68,32 8
4  558
5270 DATA 79 78,32 76 78 78 71 4
4  538
5280 DATA 32 80 76,69,65,83 69,3
2 -506
5290 DATA 82 65 45 65,78 84 69 8
2  578
5300 DATA 13 0 56 96,162 0 189,6
3 -575
5310 DATA 48 240,10 205 128 31,2
40 45 -848
5320 DATA 232 232 76 230,47 32 2
10 36  1057
5330 DATA 13,150 60 65 66 73,67,
65, 595
5340 DATA 32 85 78 75 78 78 87,7
8, 502
5350 DATA 44 32,80 76 68 65 83 6
8 -510
5360 DATA 32,82 65 45 69 78 84,6
8  528
5370 DATA 82 13 0 56,96,232,189
63 -731
5380 DATA 48 160 20 145 251 172,
128 31, -855
5390 DATA 136,136 136 185,131,31
 145 251,-1151
5400 DATA 136 16,248,173 128,31
56 233, 1021
5410 DATA 2 160 16 145 251 24 96
,65 -753
5420 DATA 8 56 0 67,10 60 11,84
 323
5430 DATA 1 0 0 0 0,0 0 0  1
5440 DATA 0,0 0 0 137,141 187 14
0 -505
5450 DATA 213,214 215,0 0 0 0,0
 642
5460 DATA 0 0 0 0 0 0 0 0  0
5470 DATA 0 0,0 0,0,0 0 0  0
5480 DATA 0 0 0 0 0 0 0 0  0
5490 DATA 0 0 0 0 0 0 0,0  0
5500 DATA 0 0,0,0,0 0 0 0  0
5510 DATA 0 0 0 0 0 0 0 0  0
```

```
PROGRAM  BOOT UTIL
```

```
10 POKE DEC( 2E ) DEC( 40 )
20 BANK0
30 POKE DEC( 4000 ) 0
40 POKE DEC( 1211 ) DEC( 40 )
50 RUN "LABEL UTILITY
```

PROGRAM TXTCNTL MOD

```
10 POKE DEC("2E"),DEC("40")
20 BANK0
30 POKE DEC("4020") 0
40 POKE DEC("1211") DEC("40")
50 RUN "LABEL-UTILITY
```

PROGRAM TXTCNTL MOD

```
10 REM THIS IS A PANEL CONTROL U
TILITY
20 REM $"PANEL INIT"
30 CD$="[illegible]
"
40 CU$=""TTTTTTTTTTTTTTTTTTTTTTTT
"
50 LF$= [illegible]
[illegible]
60 RG$= [illegible]
[illegible]
70 RETURN
80 REM
90 REM THIS IS A TEXT DISPLAY FO
R INPUT
100 LN HAS THE CHARACTER LIMIT
110 XP AND YP HAVE THE POSITION
FOR TI$
120 TI$ HAS THE TEXT TO BE DISPL
AYED
130 REM INPUT IS AFTER THE TEXT
140 REM $"GET TEXT"
150 GOSUB "POSITION"
160 PRINT TT$,
170 IF RA=1 THEN BEGIN
180   FOR LI=1 TO LN
190     PRINT" ";
200   NEXT
210   PRINTLEFT$(RG$,LN)
220 BEND
230 LK=0     REM NO  OF KEYS PRES
SED
240 IN$=""
250 DO
260   GETKEY KY$
270 IF KY$=CHR$(13) THEN  EXIT2"
280   IF KY$=CHR$(20) THEN BEGIN
290     IF LK>0 THEN BEGIN
300       LK=LK-1 PRINT "
",
310       IN$=LEFT$(IN$,LK)
320     BEND
330   BEND ELSE BEGIN
340     IF LK<LN THEN BEGIN
350       PRINTKY$
360 :     IN$=IN$+KY$
370       LK=LK+1
380     BEND
390   BEND
400 LOOP UNTIL KY$=CHR$(13)
410 REM $"EXIT2
420 RETURN
430 REM DISPLAY TEXT AT POSITION
 DEFINED
440 REM $"DISPTEXT
450 GOSUB "POSITION"
460 PRINT TT$,
470 RETURN
480 REM
490 REM POSITION CURSOR
500 REM $"POSITION
510 PRINT"#";LEFT$(CD$,YP),LEFT$
(LF$,XP),
520 RETURN
```

PROGRAM UTIL MAIN

```
10 IF PEEK(DEC("2E"))<64 THEN RU
N "BOOT UTIL"
20 DIM B$(15)
30 GOSUB "PANEL INIT
40 BANK0
50 BLOAD "LABEL-LINKER" B0
60 MO=0
70 PRINTCHR$(14),
80 DO
90   COLOR 0 16
100 :  COLOR 4 0
110 :  COLOR 5,5
120    PRINT "J                                 
r *
130    PRINT                           ————
—"
140    PRINT "[illegible]"
150    COLOR 5 6
160    PRINT "        1           PDATE
 DEVICE TABLE
170    PRINT "[illegible]"
180    COLOR 5,7
190 ,  PRINT "        2           PDATE
 COMMAND TABLE   $FE"
200    PRINT"[illegible]"
210    PRINT "        3           PDATE
 COMMAND TABLE   $CE
220    PRINT "[illegible]
230 :  COLOR 5 3
240    FRINT "          —         NO UT
ILITY
250    PRINT "[illegible]"
260 :  COLOR 5 1
270    PRINT "           SELECT OPTI
ON PLEASE
280    DO
290      GETKEY A$
300    LOOP UNTIL A$="E" OR A$="1"
 OR A$="2" OR A$="3"
310    IF A$<>"E" THEN BEGIN
320      TP$="$FE":IF A$="3" THEN
A$="2":TP$="$CE"
330        ON ASC(A$)-48 GOSUB "UPD
ATE DEVICE","UPDATE COMMAND"
340    BEND
350 LOOP UNTIL A$="E"
360 IF MO<>0 THEN BEGIN
370   SCRATCH "OLDLINKER
380   RENAME "LABEL-LINKER" TO "
OLDLINKER
390   BSAVE "LABEL-LINKER" B0 P0
192 TO P12432
400 BEND
410 PRINT "J"
420 END
```

PROGRAM UPDATE DEVICE

```
10 PRINT "J          PREFIX
   DEVICE NO"
20 PRINT "             ———————
  ———————————
30 LO=DEC("303F")
40 T=PEEK(LO)
50 CO=0
60 DO WHILE T<>0
70   B$(CO)=CHR$(T)
80   PRINT "                "!B$(CO);"
                        !PEEK(LO+CO*2+1
)
90 :   CO=CO+1
100    T=PEEK(LO+CO*2)
110 LOOP
120 EN=CO-1
130 DO
140 :  GOSUB "GET INPUT1
150    IF PR$<>"" THEN BEGIN
160      CO=0 FO=0
170      DO WHILE CO<=EN AND FO=0
180        IF B$(CO)=PR$ THEN FO=
1 ELSE CO=CO+1
190      LOOP
200      IF CO=10 THEN YP=23:XP=1
0 TT$="TABLE IS FULL":GOSUB "DIS
PTEXT" ELSE BEGI
N
210          POKE (LO+CO*2) ASC(PR$
)
220          POKE (LO+CO*2+1) DV
230          IF FO=1 THEN BEGIN
240            XP=13 YP=23:TT$="ENT
RY CHANGED":GOSUB "DISPTEXT"
250          BEND ELSE BEGIN
260            XP=16 YP=23 TT$="ENT
RY ADDED
270            GOSUB "DISPTEXT
280            EN=EN+1
290            B$(CO)=PR$
300          BEND
310          PRINT "[illegible]",
320          PRINT LEFT$(CD$,CO)
330 :    PRINT "                  !B$(CO
);                  [illegible]         PEE
K(LO+CO*2+1)
340        BEND
350        SLEEP3
360 :      XP=5 YP=20 TT$="


370        GOSUB "DISPTEXT"
380        YP=21 GOSUB "DISPTEXT
390 :      YP=23 GOSUB "DISPTEXT
400    BEND
410 MO=1
420 LOOP UNTIL PR$=""
430 RETURN
440 REM GET THE DATA
450 REM $"GET INPUT1"
460 LN=1 RA=1 XP=10:YP=20 TT$="D
EVICE
470 EO=1
480 DO
490 :  GOSUB "GET TEXT
500    PR$=IN$
510    IF PR$>="A" OR PR$<="Z" OR
 PR$=CHR$(13) THEN EO=0
520 LOOP UNTIL EO=0
530 IF PR$="" THEN  EXIT
540 LN=3 RA=1 XP=5 YP=21 TT$="AD
DRESS
550 DO
560    GOSUB "GET TEXT"
570 :  DV=INT(VAL(IN$))
580    IF DV<0 OR DV>255 THEN EO=
1 ELSE EO=0
590 LOOP UNTIL EO=0
600 REM $"EXIT
610 RETURN
```

PROGRAM UPDATE COMMAND

```
10 LM=20 1
20 PRINT "J    FIRST TOKEN IS -
  TP$
30 PRINT "[illegible]              TOKEN
```

```
40 PRINT                                  "
50 IF IT$= $FE  THEN LO=DEC( 305
8 ) ELSE LO=DEC  30"C )
60 I=PEEK(LO
70 CO=0
80 DO WHILE I<>C
90   B$(CO)=RIGHI$ HE+$ I  2)
100  PRINT '                          B
$(CO)
110   CO=CO+1
120   I=PEEK(LO+CO
130 LOOP
140 EN CO 1
150 DO
160   GOSUB  GEI INPUTI"
170   IF MDS<>   THEN BEGIN
180 ;    CO=0 FO=0
190      DO WHILE CO<=EN AND FO=0
200          IF B$(CO)=IK$ THEN FO=
1 ELSE CO=CO+1
210      LOOP
220      IF MDS= O  AND FO=0 THEN
 BEGIN
230          XP=10 YP=23 IT$="ENTRY
 DOESN T EXISI
240          GOSUB  DISPTEXI
250      BEND ELSE BEGIN
260          IF MDS= I  AND EN=LM I
HEN BEGIN
270              XP=10 YP=23 IT$= NO
MORE POOM IN TABLE
280              GOSUB  DISPTEXT
290          BEND ELSE BEGIN
300              IF MDS= I  AND FO=1
THEN BEGIN
310                  XP=10 YP=23 IJ$="I
OKEN ALREADY EXISIS
320                  GOSUB  DISPTEXI
330 BEND ELSE BEGIN
340                  MO=1
350                  IF MDS= I  THEN BE
GIN
360                      B$(CO)=IK$
370                      EN=EN+1
380                      PRINT "MMMM
390                      PRINTLEFT$(CDS C
O)
400                      PRINT
            B$(CO)
410                      XP=15 YP=23 IJ$=
 IOKEN INSERTED
420                  GOSUP  DISPIEXI
430              BEND ELSE BEGIN
440                  REM DELETE ENTRY
450                  PRINT "MMMM"
460                  PRINTLEFT$(CD$ C
O)
470                  FOR L1=CO IO EN
1
480                      IF EN=0 IHEN B
$(0)="    ELSE B$(L1)=B$(L1+1)
490                      PRINI
        " B$(L1)
500                  NEXT LI
510                  PRINT
                 "
520                  EN=EN-1
530                  XP=15 YP=23 IT$=
 IOKEN DELETED
540                  GOSUB  DISPTEXI
550              BEND
560          BEND
570      BEND
580    BEND
590    SLEEP3
600  BEND
610  XP=5;YP=20 IJS="

620  GOSUB  DISPIEXI"
630  YP=21 GOSUB  DISPIEXI
640  YP=23 GOSUB  DISPIEXI
650 LOOP UNTIL MDS=
```

```
660 FOR LI=0 IO EN REM REPLACE O
ATA
670   POKE LO+L1 DEC($$(L1))
680   NEXT LI
690 IF EN<LM IHEN BEGIN
700   FOR L1=EN+1 IO LM
710      POKE LO+L1 0 REM CLEAR D
IHERS
720   NEXI LI
730 BEND
740 RETURN
750 REM GEI IHE INPUI
760 REM $ GEI INPUI2
770 LN=1 RA=1 XP=10 YP=20 IIS="C
OMMAND
780 EO=1
790 DO
800   GOSUB  GEI IEXT
810 ; MDS=IN$
820   IF MDS= O' OR MDS= I' OR M
DS=" IHEN EO=0
830 LOOP UNTIL EO=0
840 IF MDS= " THEN "EXIT1
850 LN=3 RA=1 XP=11:YP=21 IIS="I
OKEN  "
860 DO
870   GOSUB  GEI IEXT
880   CH=DEC(IN$) IKS=RIGHI$(HEX
$(DEC(IN$)),2)
890   IF CH<0 OR CH>255 THEN EO=
1 ELSE EO=0
900 LOOP UNIIL EO=0
910 REM $ EXIT1
920 RETURN
```

PROGRAM: PRINI MOD

```
10 REM IHIS IS A PRINIER CONIROL
 MODULE
20 REM IHE FOLLOWING VARIABLES A
RE
30 REM REQUIRED
40 REM              IPS(   TYPES
50 REM              MOC ) - CONIROL
 DAIA
60 REM              CIS   - CONIROL
 CHARS
70 REM              LP LO L1 - LOOP
 INPD
80 REM              LM    - LEFI MA
RGIN
90 REM              RM    - RIGHI M
ARGIN
100 REM              LL   - LINE FE
ED
110 REM              PL   - PAGE LE
NGIH
120 REM             254 ESS   LF S
130 REM
140 REM
150 REM IHIS IS IHE INIIIALISATI
ON
160 REM AND PRINIER DEFINIIION S
ECIION
170 REM $ INII PRINIER
180 DIM IPS(10) MO(10 8)
190 EE=-1
200 IF IPS(1)=   THEN BEGIN
210   RESTONE 470
220   FOR LO=1 IO 10
230      READ IPS(LO)
240      FOR LP=1 IO 8
250         READ MO(LO LP)
260      NEXI LP
270   NEXI LO
```

```
280 OPEN
290 OPEN 254 9
300 IF FL<>C IJCH BEGIN
310   OPEN254 4 3
320   PR INK 54 CHR$(PL
330   GI SUP  IHEN  STATUS
340   CLOSE 254
350 BEND
360 IF LL<>0 AND CS= 1 THEN SIS=
CHR$ 27 +CHR$ 108 -CHR$ LM) GOSU
B  PRINIIT
370 IF RM<>0 AND EE= 1 IHEN SIS=
CHR$(27)+ D'+CHR$(RM) GOSUB  PRI
NIIT
380 IF LL<>0 AND EE= 1 IHEN SIS=
CHR$(27)  + +CHR$(LL)
390 IF LEN(CIS)<=2 AND EE= I IHE
N BEGIN
400 IF MIDS(CIS 1 1)= S  OR MIDS
(CIS 2 1)= S  IHEN SIS=CHR$(147)
 GOSUB  PRINIIT"
410 IF MIDS(CIS,1 1)= I  OR MIDS
(CIS 2,1)="I  IHEN SIS=CHR$(19)
GOSUB  PRINIIT
420 IF MIDS(CIS 1 1)= U  OR MIDS
(CIS 2,1)= U  IHEN SIS=CHR$(27)+
"UI  GOSUB  PRI
NIIT
430 IF MIDS(CIS I 1)= B  OR MIDS
(CIS 2,1)= B  IHEN SIS=CHR$(27)+
"U0  GOSUB  PRI
NIII"
440 RETURN
450 REM CONIROL DAIA FOR PRINIIN
G
460 REM $'PRINI DAIA
470 DAIA C ,3,27 87 49 3,27 87 4
8        REM DOUBLE WIDIH
480 DAIA L" 1 17 0 2 1 145 0 0
         REM LOWER CASE
490 DAIA I  2,27 52 0,2,27 53 0
         REM ITALIC ON
500 DAIA    3 27 45,1 3 27 45,0
         REM UNDERLINE OFF
510 DAIA S  2 27 71 0,2 27 72 0
         REM DOUBLE STRIKE
520 DAIA P  2 27 80 0 2 27 78,0
         REM PICA PITCH
530 DAIA E  2 27 69,0 2 27 70,0
         :REM EMPHASISED
540 DAIA <" 3 27 83 49 2,27,84 0
         REM SUBSCRIPT
550 DAIA >  3,27 83 0 2 27 84 0
         REM SUPERSCRIPT
560 DAIA N  3,27 120 1 3 27,120
0        REM NLQ
570 REM CIS HAS IHE CONIROL CHAR
ACIERS
580 REM PRS HAS IHE IEXI ID BE P
RINIED
590 REM IHIS IS FOR CBM MODE
600 REM
610 REM D   OUBLE STRIKE
620 REM L   LOWER CASE
630 REM - - UNDERLINE
640 REM I   ITALIC
650 REM S - DOUBLE STRIKE
660 REM E - EMPHASISED
670 REM N   NLQ
680 REM P - PICA ( DEFAULI IS EL
ITE )
690 REM > - SUPERSCRIPT
700 REM <   SUBSRIPT
710 REM C - CONDENSED PRINI
720 EE= I
730 REM $ DEFINE PRINT
740 IF LEN(CIS)<=11 IHEN BEGIN
750   LI=I DO WHILE LI<=LEN(CIS)
760      IF MIDS(CIS LI,I)= C  IH
EN OPEN254 4 13 PRINI#254 GOSUB
 CHECK STAIUS  C
LOSE 13 ELSE BEGIN
```

```
770 ;      LP=1 DO WHILE LP<=11 A
ND EE=-1
780          IF TP$(LP)=MID$(CI$,
L1,1) THEN BEGIN
790 ;            ST= "
800            LO=1 DO WHILE LO<=
MO(LP 1) AND EE=-1
810              ST$=ST$+CHR$(MO(
LP LO+1))
820            LO=LO+1 LOOP
830            GOSUB 'PRINTII
840          END
850        LP=LP+1 LOOP
860      END
870   L1=L1+1 LOOP
880 END
890 RETURN
900 REM CLEAR PRINT MODES DEFINE
D BY
910 REM CI$
920 REM $ CLEAR PRINT
930 EE=-1
940 IF LEN(CI$)<=11 THEN BEGIN
950    L1=1 DO WHILE L1<=LEN(CI$)
 AND EE=-1
960      LP=1 DO WHILE LP<=11 AND
 EE=-1
970          IF TP$(LP)=MID$(CI$ L1
,1) THEN BEGIN
980            LO=1 DO WHILE LO<=MO
(LP,5) AND EE=-1
990            ST= "
1000              ST$=ST$+CHR$(MO(L
P LO+5))
1010            LO=LO+1 LOOP
1020            GOSUB  PRINTII"
1030          END
1040        LP=LP+1 LOOP
1050    L1=L1+1 LOOP
1060 END
1070 RETURN
1080 REM $ RESET PRINTER"
1090 OPEN 254 4,10
1100 PRINT#254
1110 GOSUB  CHECK STATUS"
1120 CLOSE 254
1130 ST$=CHR$(27)+CHR$(120)+CHR$
(0)    REM NLO OFF
1140 GOSUB 'PRINTII
1150 RETURN
1160 REM
1170 REM THIS PRINTS A LINE IN S
IS
1180 REM $ PRINTII"
1190 PRINT#255 ST$
1200 IF ST=0 THEN PRINT#255
1210 GOSUB "CHECK STATUS"
1220 RETURN
1230 REM
1240 CHECK STATUS
1250 REM
1260 REM $ CHECK STATUS"
1270 IF ST<0 THEN EE=1
1280 RETURN
1290 REM
1300 REM SHUT PRINTER OFF
1310 REM $ PRINT OFF
1320 CLOSE 255
1330 RETURN
```

```
PROGRAM  COMPACT LOADER
```

```
10 BANK 0
20 COLOR 0 1:COLOR 4 1 COLOR 5 8
30 PRINT"□                COMPACT LOAD
ER
40 PRINT"                          —
-
50 PRINT "◆◆◆◆N                  ADDPES
S —> S
60 SA=28672
70 DO WHILE SA<29223 AND EE=0
80   READ DT
90   IF DT < 0 THEN BEGIN
100     IF A$S(DT) <> TT THEN EE
=1 ELSEIT=0
110    END:ELSE BEGIN
120      POKE SA DT TT=TT+DT
130      PRINT HEX$(SA) "◆◆◆◆"  SA
=SA+1
140   END
150 LOOP PRINT
160 IF EE=1 THEN PRINT "◆◆◆◆ERROR
 IN LINE  PEEK(65)+PEEK(66)*256
 ELSE BEGIN
170 ; PRINT"◆◆◆SAVING COMPACT
180    BSAVE  COMPACT  80 F28672
TO F29229
190   PRINT  ◆◆◆PROGRAM SAVED
200 END
210 DATA 32,116,113,176 50,32,77
 113,-739
220 DATA 169,1 141,57 114 162,3,
32  675
230 DATA 51 113,32,50 113,202 16
 247 -832
240 DATA 32 51,113 201 0,208 7 3
2 -644
250 DATA 145 112,144 228 176 47
201,34 -1087
260 DATA 208 6 32 115,112 76,24
112 -605
270 DATA 201,32 208 6,32 51,112
76  758
280 DATA 24,112 201,58 208,6,32
133 -774
290 DATA 112,76,24 112 201,143 2
08,7 -883
300 DATA 32 218,112 144 203 176,
185 32 -1102
310 DATA 56,113 76,24,112 32,155
 113  663
320 DATA 76 0,2 174,55 114 208 1
0  643
330 DATA 174 53 114,208,5 174 54
,114 -896
340 DATA 208 3 32 58 113,165 0 1
41 -724
350 DATA 57,114 56 72 165 0,141
57  706
360 DATA 114 173 53,114,73,255 1
41 53, 976
370 DATA 114,104 76,106 112,174
57 114 -857
380 DATA 240 224,174 54 114 240
219 208  1473
390 DATA 228,32 58,113 165,1,141
 57  731
400 DATA 114,165 0 141 53,114 14
1 53  731
410 DATA 114 173,49,114,133 251
173,50 -1257
420 DATA 114 133 252 169 0 173,4
7 114  993
430 DATA 141 49,114 173 48,114 1
41 50  830
440 DATA 114 208 32,243,113 136,
173 45,-1068
450 DATA 114 32,243 113,160 0,32
 206  908
460 DATA 113 141,56 114,208 32,2
06 113 -875
470 DATA 136 13,56 114,208 2 56,
56, 681
480 DATA 24 96,174,55,114 248,46
 173  922
450 DATA 57 114 208 51 173 47 11
4,141 -905
500 DATA 51 114 173,48 114 141,5
2,114 -807
510 DATA 32 31 114 32,230 113 24
0 5 -881
520 DATA 201,58 208 244 32,35 11
3 24  919
530 DATA 56,173 51,114 141,47,11
4 173 -509
540 DATA 52 114 141,48,114,32 50
 113  672
550 DATA 169 1 141 53 114 24 56
 162  766
560 DATA 3 32 31,114,202 16 250
 32 -680
570 DATA 38 113 32 255,113 56 56
,32  736
580 DATA 206 113,240 6,32,255 11
3 76  1041
590 DATA 35 113,96 32,206 113 32
 255,-886
600 DATA 113 96,72 173,47 114,13
3 251  993
610 DATA 173 48,114,133 252,104,
32 243  1095
620 DATA 113 32,8 114,56 160 0 1
40 -663
630 DATA 53 114,140 55 114,165,4
5 141  831
640 DATA 45 114 141,45 114 141,4
7 114 -765
650 DATA 165 46,141 46 114,141 5
0 114  817
660 DATA 141 48,114 165 251 141
172 2, 1036
670 DATA 141 105 2,56,201,1 208,
6  840
680 DATA 141 54 114 76 131,113 1
63,0,-756
690 DATA 141 54 114 224 1,208,5
142  680
700 DATA 55,114,24 56,162 0 142,
55 -693
710 DATA 114,173 55 114 13 54 11
4 208 -845
720 DATA 241 56 56,165,0 32,58,1
13  765
730 DATA 32 58 113 169 16 133 25
1,169 -541
740 DATA 10,133 252 160 0,173,47
 114 -897
750 DATA 32 243 113 208 173,48 1
14 32 -855
760 DATA 243 113,162,7 189,198 1
13,157 -1182
770 DATA 0,2,202,16,247 96,165 0
 -732
780 DATA 141,0 255 76,63 77 173
45  830
790 DATA 114 133 251 173 46 114
133 252 -1216
800 DATA 142 58,114 162 63 32 16
2,2, 735
810 DATA 174,58 114 72 104,96 17
3 47, 838
820 DATA 114,133,251,173 48,114
133,252  1218
830 DATA 76 216,113,142 58,114 1
62,63 -544
840 DATA 32,175 2 174 58,114 96
238, 885
850 DATA 45,114,208 3 230 46 114
,96, 664
860 DATA 238 47 114 208,3,238,48
 114 -1010
870 DATA 56,206,45 114,173 45 11
4 201 -994
880 DATA 255 208,3 206,46 114,96
 206 -1134
890 DATA 47 114 173 47,114 201 2
55 208  1159
900 DATA 3 206 48 114 96 -467
```

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YOUR COMMODORE COPY DEADLINES IN 1988:-
MAY ISSUE - 15th FEBRUARY 1988

B A E A K

OOPS!

Unfortunately an error appeared in the program Lister 128 in the December issue
The corrections are as follows
Add the following to the end of lines 420 and 440
L=L+1
Apologies for the inconvenience caused

Program Submissions

Due to the illness of our software evaluator some people may be experiencing a delay in getting to replies regarding submissions We are trying to clear the backlog of programs as quickly as we can but this is taking some time This backlog also effects Bug Finders and Lifesavers

We apologise for the delay and would ask that you would bear with us while the backlog is cleared

The publication of lifesavers has also been halted because of this software backlog We will be bringing you more short programs and tips as soon as we can

Commodore Where Are You?

At the *Your Commodore* office we are repeatedly asked for the address and telephone number of Commodore U K Many people after referring to their computer manuals believe them to be based in Corby

The Commodore plant at Corby was closed down some time ago Reproduced here you will find the correct address for Commodore U K

We suggest that you write this correct address in the front of your computers manual for future reference

Commodore Business Machine (UK),
Commodore House,
The Switchback
Gardner Road
Maidenhead
Berks SL6 7XA

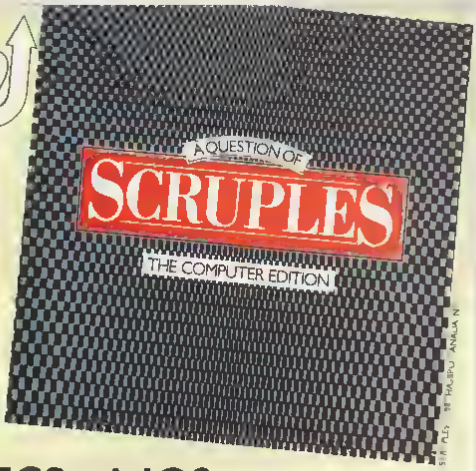
At the *Your Commodore* office we receive hundreds of letters from readers every month We do try and answer each individually but sometimes this is impossible due to pressure of work If you have written to us and not received a personal reply, we apologise for this but we cannot promise to reply to every item of mail we receive If you feel that your question or letter really needs an answer, then inclusion of an s a e will guarantee a reply, although this may still take time to arrive

Puzzle Corner

After a series of adventures you have made your way to the evil wizard s treasure room All that remains is to make off with the loot!

The treasure is on an island in the centre of an acid filled pool The distance between you and the island is twelve feet All you can find to help you are two planks but unfortunately, they are both only ten feet long

Can you still get the treasure and if so how? Diagrams should be sent to Your Commodore, Puzzle Corner 1 Golden Square London W1R 3AB



Scruples, an inventive and original computer game, is in the shops today. Do you rush out and sell a personal possession so you can buy it before it's gone?

Scruples computer game is available on Spectrum 48/128 +2 + 3 Commodore 64/128 Amstrad CPC 464/6128 and Atari ST. The computer you own is not one of these. Do you replace it immediately with one that runs Scruples?

Scruples makes such an excellent Christmas present, you buy one for your computer and make your friends play you are completely hooked – do you keep it?

You are due to keep an important appointment that may affect your future career. Your spouse leads up Scruples and you get involved in a game. Do you keep the appointment?

An attractive colleague at work is becoming very attentive and asks you to dinner. You feel sure she not only fancies you but also Scruples! You hate computers and scoff their invitation! Do you accept their invitation?

YES? NO? ...DEPENDS.

Milton Bradley's compelling game is now available for computer. Anticipate your friend's responses to the provocative questions, in Scruples. Think carefully before answering the moral dilemma you are posed – or turn the tables and give an opposite reply to the one expected! Bluff and counter bluff will be needed, and beware – the other players (the Jury) can challenge your honesty at any time.

The computer interpretation is ingenious and funny. Up to ten people can play – all human, all computer – or any combination. There is a minimum of 64 characters to choose from, each with simulated intelligence. Real players must adjust their personalities and select their appearance from a gallery of faces provided. A minimum of 230 leading questions are built-in and no game will ever be the same.

Scruples, The Computer Edition is available from all good software retailers or directly from Leisure Genius.

Spectrum 48/128/+2/+3	cass £9.95	disc £14.95
Commodore 64/128	cass £12.95	disc £14.95
Amstrad CPC	cass £9.95	disc £14.95
Atari ST	–	disc £19.95

Please state clearly machine type and media required.

Make cheques or postal orders payable to Virgin Games Ltd and send to 2/4 Vernon Yard, Portobello Road, London W11 2DX. DO NOT POST NOTES OR COINS!

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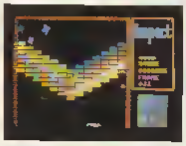
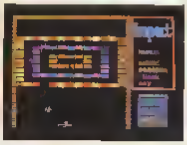
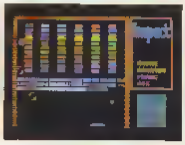


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Your Commodore March 1988

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